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Natural History

OF

NEW YORK.

[Division II. - Botany].

vol. 2.

BY AUTHORITY.

NEW YORK;
D. APPLETON & Co. AND WILEY & PUTNAM:

BOSTON;
GOULD, KENDALL & LINCOLN.

ALBANY.
CARROLL & COOK PRINTERS TO THE ASSEMBLY.
1843.

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FLORA

OF THE

STATE OF NEW-YORK,

COMPRISING

FULL DESCRIPTIONS OF ALL THE INDIGENOUS AND NATURALIZED PLANTS HITHERTO DISCOVERED IN THE STATE;

WITH REMARKS ON THEIR ECONOMICAL AND MEDICINAL PROPERTIES.

By JOHN TORREY, M.D., F.L.S.

VOL. II.

ALBANY:

CARROLL AND COOK, PRINTERS TO THE ASSEMBLY.

.....

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SAMUEL YOUNG,

Secretary of State.

Albany, 1843.

FLORA

OF THE

STATE OF NEW-YORK.

Monopetalous Exogenous Plants *(Continued)*.

Group 5. *Ovary free, or rarely coherent with the calyx, several-celled, with a single ovule in each cell. Seeds with or without albumen. Stamens inserted on the tube of the regular corolla: anthers not opening by pores or chinks.*

Order LIX. AQUIFOLIACEÆ. *DC.* The Holly Tribe.

Calyx of 4 to 6 sepals, imbricated in æstivation. Corolla 4 – 6-parted or cleft, deciduous; the stamens as many as its segments, and alternate with them. Ovary 2 – 6- (rarely many-) celled; each cell with a single suspended ovule: stigma nearly or quite sessile, lobed. Fruit drupaceous, with 2 – 6 stones or nucules. Embryo minute, at the extremity of fleshy albumen. — Trees or shrubs, mostly with coriaceous evergreen leaves. Flowers small, axillary, solitary or fasciculate, by abortion often polygamous.

1. ILEX. *Linn.; Endl. gen.* 5705. HOLLY.

[Etymology uncertain.]

Flowers mostly perfect. Calyx 4 – 5-toothed, persistent. Corolla 4 – 5-parted nearly to the base, rotate. Stamens 4 – 5. Ovary 4 – 5-celled: stigmas as many as the cells, nearly sessile, distinct or united. Fruit with 4 or 5 bony ribbed or veined nucules. Embryo very minute, nearly globose.—Evergreen (sometimes deciduous) shrubs or small trees. Leaves usually coriaceous, entire, toothed, or with spiny teeth. Peduncles many-flowered.

1. ILEX OPACA, *Ait.* *American Holly.*

Leaves ovate, coriaceous, acute, flat, sharply spinose-toothed, smooth; flowers scattered at the base of the young branches. — *Ait. Kew.* (ed. 1.) 1. *p.* 177; *Michx. fl.* 1. *p.* 228, *and f. sylv.* 2. *t.* 81; *Pursh, fl.* 1. *p.* 117; *Bigel. fl. Bost. p.* 62; *Ell. sk.* 2. *p.* 679; *Torr. fl.* 1. *p.* 194; *DC. prodr.* 2. *p.* 14; *Beck, bot. p.* 230; *Hook. fl. Bor.-Am.* 1. *p.* 121; *Darlingt. fl. Cest. p.* 114. I. Aquifolium, *Walt. fl. Car. p.* 241.

A tree 10 – 30 feet high, with spreading branches and smooth light gray bark; the trunk sometimes nearly a foot in diameter. Leaves about two inches long, thick and tough, nearly plane, somewhat shining, bright and deep green above, yellowish green underneath. Flowers solitary or in small loose fascicles; the pedicels with minute bracts at the base. Calyx small; the segments ovate, acuminate, ciliolate. Corolla yellowish white; the segments (or nearly distinct petals) usually 4 but sometimes 5 or 6, oblong, obtuse. Stamens shorter than the corolla: anthers oblong. Stigmas mostly 4, small, connivent. Drupes about the size of a large pea, nearly spherical, bright red, persistent.

Sandy soils. On the north side of Long Island, and on the hills near Kingsbridge, Island of New-York. *Fl.* June. *Fr.* September. This species is very closely allied to the European Holly, and possesses similar properties. The copious alburnum is white, and the heart brown. The grain is fine and compact. Cabinet-makers sometimes use the wood, which is very brilliant when polished. Of the inner bark, the material called *birdlime* is prepared. The berries are purgative and emetic, but are seldom employed medicinally.

2. ILEX AMBIGUUS. *Ambiguous Ilex.*

Leaves deciduous, ovate, acuminate, obtuse or acute at the base, thin, smooth, serrate; flowers tetramerous, on short pedicels, aggregated at the extremity of short lateral branches.— Prinos ambiguus, *Michx. fl.* 2. *p.* 23? not of *Ell.* or *Nutt.*

A shrub about six feet high; the younger branches marked with numerous closely approximated scales of fallen petioles. Leaves clustered at the extremity of the branches, 2 – 3½ inches long and often two inches wide, very thin and membranaceous, acute, obtuse or sometimes cordate at the base, perfectly smooth on both sides; the serratures acuminate and appressed: petioles 5 – 8 lines long. Flowers polygamous, 3 – 5 at the extremity of each

branch; the pedicels only one or two lines long. Calyx-segments short, acute, finely ciliate. Corolla white, 4-parted nearly to the base, rotate: segments oblong. Stamens 4: filaments short and broad; cells of the anther distinct, adnate to the sides of the filament. Ovary ovate-conical: stigmas 4, obtuse, distinct, erect. Fruit globular, red, the size of a small pea, smooth: nucules bony, strongly costate-veiny. Embryo very minute, spherical, at the extremity of fleshy albumen.

On the Catskill mountains (*Mr. Carey*). This species is probably not rare, and yet if it be not the *Prinos ambiguus* of Michaux, it must be undescribed. I have received it from Mr. Wolle of Bethlehem, Pennsylvania, who found it on the mountains in the neighborhood of that town. Dr. Gray and Mr. J. Carey, in their recent botanical journey to the mountains of North-Carolina, found a plant nearly allied to this, and perhaps not differing essentially. The pedicels, however (I have only seen the fruit), arise from lateral buds, and not from the extremity of the branches, and the persistent calyx is 5 – 6-parted. Neither the New-York nor the Southern plant can be the *Prinos ambiguus* of Elliott; and *P. ambiguus* of Nuttall seems to be distinct from both. I have referred this species to ILEX on account of the sulcate nucules, but perhaps the two genera ought to be united.

2. PRINOS. *Linn.; Endl. gen.* 5706. *WINTER-BERRY.*

[*Prinos* is the Greek name of the *Quercus Ilex*, and is said to be derived from *prio*, to saw; the leaves being serrated.]

Flowers mostly diœcious or polygamous. Calyx 4 – 6-toothed, persistent. Corolla mostly 6-cleft (sometimes 4- or 5-cleft), rotate. Stamens usually 6. Ovary 4 – 6-celled: stigmas 4 – 6, sessile, distinct or united. Fruit with 4 – 6 bony smooth nucules. Embryo very minute.—Shrubs, often with evergreen leaves. Peduncles axillary, solitary or aggregated.

This genus is too nearly related to ILEX.

1. PRINOS VERTICILLATUS, *Linn.* *Black Alder. Common Winter-berry.*

Leaves deciduous, oval or obovate, serrate, acuminate, pubescent and prominently veined underneath; flowers mostly 6-parted, the staminiferous somewhat umbellate, the pistilliferous aggregated or solitary; calyx-segments ciliate.—*Linn. sp.* 1. *p.* 130; *Pursh, fl.* 1. *p.* 220; *Bigel. fl. Bost. p.* 129, *and med. bot.* 3. *p.* 141. *t.* 55; *Bart. veg. mat. med. t.* 17; *Torr. fl.* 1. *p.* 337; *DC. prodr.* 2. *p.* 17; *Hook. fl. Bor.-Am.* 1. *p.* 121; *Beck, bot. p.* 230; *Darlingt. fl. Cest. p.* 214. P. Gronovii, *Michx. fl.* 2. *p.* 236.

A shrub 6 – 8 feet high, much branched. Leaves 2 – 3 inches long, uncinately serrate, with prominent veins underneath: petioles about half an inch long. Flowers numerous, white, diœcious. STAMINIFEROUS FL. in small axillary umbels; the common peduncle rather longer than the pedicels, which are about one-fourth of an inch in length. Stamens usually as many as 6, and sometimes 7: ovary abortive. FERTILE FL. mostly perfect, on shorter pedicels, and with scarcely any common peduncle. Ovary conical, about 6-celled: stigmas 4 – 6-lobed. Fruit globose, the size of a large pea, scarlet when ripe, crowded on the branches so as to

appear verticillate, remaining on the plant part of the winter. Nucules about 6, smooth. Embryo extremely minute, nearly globose.

Low grounds, and in moist thickets; common. *Fl.* June. *Fr.* October. The bark of this plant is tonic and astringent. A decoction of it is used for washing ill-conditioned ulcers. (See *Wood & Bache, U. S. Dispens. p.* 534.)

2. PRINOS LÆVIGATUS, *Pursh?* *Smooth Winter-berry.*

Leaves deciduous, elliptical or elliptical-lanceolate, acuminate, serrate, smooth or slightly pubescent on the veins underneath; flowers 6 – 7-parted, the fertile (perfect) on slender pedicels, solitary or 2 – 3 together; calyx-segments smooth; stigmas distinct.—*Pursh, fl.* 1. *p.* 220? *Muhl. cat. p.* 36; *Torr. fl.* 1. *p.* 338.

A shrub 4 – 7 feet high, much branched. Leaves about two inches long and three-fourths of an inch wide, thin, acute at the base, with appressed and commonly mucronate serratures, somewhat shining above, the under surface pubescent only on the veins. Sterile flowers not seen. Fertile or rather perfect flowers axillary, on pedicels which are about half an inch long. Calyx-segments acuminate, not ciliate. Corolla greenish white; the segments oval. Stamens as many as the segments of the corolla. Ovary conical, crowned with 6 – 7 erect distinct stigmas. Fruit larger than in *P. verticillatus*, bright red: nucules smooth.

Cedar swamps, Long Island. *Fl.* June. *Fr.* September. Although this species is in general easily distinguished from the preceding, there are occasionally found specimens that seem to connect the two. Indeed all the North American species, both of this genus and of ILEX, require a thorough revision.

3. PRINOS GLABER, *Linn.* (Pl. lxxii.) *Evergreen Winter-berry. Ink-berry.*

Leaves sempervirent, coriaceous, cuneate-oblanceolate, smooth and shining, sparingly toothed at the summit; peduncles axillary, mostly 3-flowered. — *Linn. sp.* 1. *p.* 330; *Ait. Kew.* (ed. 1.) 1. *p.* 478; *Michx. fl.* 2. *p.* 236; *Pursh, fl.* 1. *p.* 220; *Ell. sk.* 2. *p.* 707; *Torr. fl.* 1. *p.* 338; *Bigel. fl. Bost. p.* 129; *Beck, bot. p.* 231; *DC. prodr.* 2. *p.* 17; *Hook. fl. Bor.-Am.* 1. *p.* 122.

A shrub 2 – 4 feet high, much branched, with dark grayish bark. Leaves crowded, about an inch and a half long, of a thick and leathery texture, bright green above, paler underneath, with a few appressed teeth toward the summit. Flowers numerous, at the base of the young branches, solitary, or more commonly three together on a common peduncle, which is rather longer than the pedicels. Calyx-segments semiovate, acute, smooth. Corolla white, 6-cleft; the segments oval, spreading. Stamens about half as long as the corolla: filaments slender: anthers large, oblong, innate. Ovary conical: stigmas minute. Fruit the size of a small pea, black when ripe, shining. Nucules usually 6, bony-cartilaginous, smooth. Testa of the seed reddish. Embryo extremely minute, at the extremity of firm albumen.

Swamps, Long Island, &c.; not found in the interior of the State. *Fl.* July. *Fr.* September.

3. NEMOPANTHES. *Raf. journ. phys.* 1819. *p.* 96; *DC. mem. soc. Genev.* 1. *p.* 41. *MOUNTAIN HOLLY.*

[From the Greek, *nemos*, a grove, *opis*, eye, and *anthos*, a flower. LINDLEY *in London Enc. pl.*]

Flowers (by abortion) dioecious or polygamous. Calyx very minute. Petals 4 – 5, distinct, linear-oblong, deciduous. Stamens 3 – 5, longer than the petals. Ovary in the sterile flowers fleshy and abortive, without stigmas: in the fertile, hemispherical; style none; stigmas 3 – 5. Fruit somewhat quadrangular, red: nucules usually 4, smooth, bony. Embryo very minute, at the extremity of fleshy albumen. — A shrub with smooth ovate entire or denticulate deciduous leaves, and minute flowers on long filiform axillary peduncles. Fruit red.

1. NEMOPANTHES CANADENSIS, *DC.* *Mountain Holly. Black Alder.*

DC. l. c., plant. rar. hort. Genev. t. 3, *and prodr.* 2. *p.* 18; *Beck, bot. p.* 230; *Hook. fl. Bor.-Am.* 1. *p.* 122. N. fascicularis, *Raf. in Sill. journ.* 1. *p.* 377. Ilex Canadensis, *Michx. fl.* 2. *p.* 229. *t.* 49; *Pursh, fl.* 1. *p.* 118; *Torr. fl.* 1. *p.* 194; *Bigel. fl. Bost. p.* 62.

A shrub 3 – 6 feet high. Leaves 1 – 1½ inch long, ovate or oval, fascicled at the extremity of short branches, acute at each end, membranaceous when young, but at length somewhat coriaceous, usually entire, but sometimes with several acute denticulations toward the summit: petioles half an inch long. Flowers on slender pedicels of about an inch in length, which spring from among the fascicles of leaves. Calyx a mere narrow margin. Corolla minute; the petals spreading. Stamens sometimes 3: filaments slender: anthers oblong. Fruit the size of a large pea, rather dry, bright scarlet.

Swamps, or sometimes in rather dry situations; frequent on mountains, but not uncommon in low grounds. Northern and western part of the State, and on the Catskill mountains. *Fl.* May – June. *Fr.* September. I have found this plant on the borders of Hackensack meadows, about one mile from Hoboken.

ORDER LX. EBENACEÆ. *Vent.* THE EBONY TRIBE.

Flowers usually polygamous. Calyx 3 – 6-leaved, free from the ovary, persistent. Corolla 3 – 6-cleft, deciduous, somewhat coriaceous, mostly pubescent. Stamens twice to four times as many as the lobes of the corolla. Ovary 3 – many-celled, with one or two pendulous ovules in each cell: styles united or distinct: stigmas as many as the cells of the ovary. Fruit a kind of berry, dry or

succulent. Seeds few, with a smooth coriaceous testa. Embryo in the axis of cartilaginous albumen : cotyledons foliaceous. — Trees or shrubs, destitute of milky juice, with alternate mostly entire leaves.

1. DIOSPYROS. *Linn.; Endl. gen.* 4249. *PERSIMMON.*

[From the Greek, *dis, dios,* Jupiter, and *pyros,* fruit; meaning heavenly fruit.]

Calyx deeply 4 – 6-cleft. Corolla urceolate, 4 – 6-cleft. STERILE FL. Stamens 8 – 16. Ovary rudimentary. PERFECT FL. Stamens abortive. Ovary 8 – 12-celled, with a single ovule in each cell : styles 2 – 4, more or less united at the base : stigmas simple or 2-cleft. Fruit globose, 8 – 12-seeded. Seeds compressed. Embryo straight. — Trees or shrubs, with entire leaves. Flowers axillary, nearly sessile. Peduncles few-flowered.

1. DIOSPYROS VIRGINIANA, *Linn.* *Persimmon.*

Leaves ovate or oval, acuminate, nearly smooth above, more or less pubescent underneath; petioles pubescent; buds smooth; flowers tetramerous.—*Linn. sp.* 2. *p.* 1057; *Michx. fl.* 2. *p.* 258, *and f. sylv.* 2. *t.* 93; *Pursh, fl.* 1. *p.* 265; *Ell. sk.* 2. *p.* 712; *Wats. dendr. Brit. t.* 146; *Beck, bot. p.* 229; *Audub. birds Am. t.* 87; *Darlingt. fl. Cest. p.* 244; *DC. prodr.* 8. *p.* 228.

A tree 15 – 40 feet high and seldom (in this State) more than 6 or 10 inches in diameter, irregularly branched, with a dark-colored furrowed bark. Leaves 2 – 4 inches or more in length, varying from ovate to oblong, often cordate at the base, somewhat coriaceous, nearly smooth on both sides when old, paler and a little glaucous underneath. Flowers axillary, 1 – 3 together. STERILE FL. Calyx hairy externally; the segments lanceolate. Corolla pale greenish yellow, obtusely 4-angled, somewhat coriaceous. Stamens 16, in a double series; the inner series opposite the exterior, and their filaments united with them at the base in pairs : filaments very short : anthers large, lanceolate, acute, villous at the base; the cells opening longitudinally. Ovary abortive, with a slender 4-cleft style. FERTILE FL. Calyx larger than in the sterile flowers. Stamens usually 8 : anthers abortive, villous. Ovary about 8-celled : style short : stigmas 4. Fruit roundish, about an inch in diameter, reddish orange when ripe, fleshy, very astringent until it has been acted on by frost, and then soft and luscious. Seeds 6 – 8, large, dark purple.

Rich moist lands; southern part of the State; not found north or west of the Highlands. *Fl.* June. *Fr.* October and November. The bark of the tree, like the unripe fruit, is very astringent. An infusion is employed as a gargle for ulcerated sore throat, and it is said also to cure intermittent fevers. The sapwood is of a greenish color, and the heart is brownish, close-grained and tough. In the Southern States, where the tree attains a considerable size, the wood is sometimes employed for articles requiring the qualities of strength and elasticity. The ripe fruit, after having been frozen and rendered palatable, is often seen in the New-York markets.

GROUP 6. *Ovary free (superior), or with only the base coherent with the tube of the calyx, one-celled, with a free central placenta! Stamens inserted into the regular corolla opposite its lobes.*

ORDER LXI. PRIMULACEÆ. *Vent.* THE PRIMROSE TRIBE.

Calyx 4 – 5-cleft or toothed. Corolla rotate, salver-form or campanulate. Stamens equal in number to and opposite the lobes of the corolla. Style and stigma single. Capsule one-celled, with a fleshy central placenta. Seeds usually numerous and amphitropous (peltate). Embryo straight, in the axis of fleshy albumen. — Herbaceous plants, with alternate, opposite or whorled leaves; often with naked scapes, and the leaves crowded at the base.

CONSPECTUS OF THE GENERA.

§ 1. *Capsule opening by valves. Seeds amphitropous.*

1. PRIMULA. Calyx tubular, 5-toothed. Corolla salver-form, with a cylindrical tube. Stamens 5. Stigma globose. Capsule opening with ten teeth.
2. LYSIMACHIA. Calyx 5-parted. Corolla rotate, 5-cleft. Stamens 5. Capsule globose, 5 or 10-valved, few- or many-seeded.
3. TRIENTALIS. Calyx mostly 7-parted. Corolla rotate, about 7-cleft. Stamens 7 – 8. Capsule globose, 5-valved. Seeds few.

§ 2. *Capsule opening transversely all around. Seeds amphitropous.*

4. ANAGALLIS. Calyx 5-parted. Corolla rotate, 5-lobed. Stamens 5: filaments hairy. Capsule many-seeded.

§ 3. *Capsule opening by valves. Seeds anatropous.*

5. HOTTONIA. Calyx 5-parted. Corolla salver-form, 5-lobed. Stamens 5. Capsule ovate, acute, 5-valved.

§ 4. *Capsule half inferior, opening by valves. Seeds anatropous.*

6. SAMOLUS. Calyx 5-cleft. Corolla rotate, 5-lobed, with 5 perfect stamens opposite the lobes, and 5 scales or abortive stamens alternate with them. Capsule 5-toothed.

§ 1. PRIMULEÆ, Endl. *Capsule opening by valves. Seeds amphitropous.*

1. PRIMULA. *Linn.; Endl. gen.* 4199. *PRIMROSE.*

[From the Latin, *primus*, first; many of the species flowering early in the spring.]

Calyx tubular or somewhat campanulate, 5-toothed. Corolla salver-form, with a cylindrical tube, the orifice open. Stamens 5, not exserted. Stigma capitate. Capsule opening with 10 teeth. — Leaves radical. Scape simple. Flowers umbelled, involucrate, for the most part showy.

1. PRIMULA MISTASSINICA, *Michx.* *Dwarf Canadian Primrose.*

Leaves obovate-spatulate, sparingly toothed, smooth, or sometimes (with the scape and calyx) powdery; scape slender, elongated; umbel few-flowered; segments of the corolla

cuneate-obovate, obtusely 2-cleft, about two-thirds the length of the tube. — *Michx. fl.* 1. *p.* 124; *Pursh, fl.* 1. *p.* 137; *Lehm. Prim. p.* 63. *t.* 7; *Hook. bot. mag. t.* 2973; *Duby in DC. prodr.* 8. *p.* 43. P. pusilla, *Hook. in Edin. phil. jour.* 6. *p.* 322. *t.* 11. *f.* 2, *and exot. fl.* 1. *t.* 68; *Bot. mag. t.* 3020. P. stricta, *Hornem. fl. Dan. t.* 1385. P. Hornemanniana, *Lehm. l. c. p.* 55. *t.* 4; *Hook. fl. Bor.-Am.* 2. *p.* 120.

Perennial. Plant usually smooth. Leaves 6 – 10 lines long, obtuse, repandly toothed. Scape 3 – 5 inches high. Umbel usually about 3-flowered. Involucre consisting of several short lanceolate scales or leaflets. Pedicels 4 – 6 lines long. Calyx tubular-funnelform; the segments oblong, obtuse. Corolla pale purple; the border about one-third of an inch in diameter. Capsule oblong.

Yates county (*Dr. Sartwell*), the only known locality of this neat little Primrose in the United States. I have retained Michaux's name of this species, though objectionable, on account of its priority.

2. LYSIMACHIA. *Linn.; Endl. gen.* 4207. *LOOSESTRIFE.*

[By some, the name is said to have been given in honor of King *Lysimaches:* others derive it from *lucis*, dissolving, and *machr*, battle; equivalent to the English name.]

Calyx 5- (rarely 6 – 7-) parted. Corolla somewhat rotate, 5-parted. Stamens 5 (rarely 6 – 7), sometimes with intermediate teeth or short sterile filaments. Capsule ovate-globose, mucronate, 5-valved; the valves entire or 2-cleft. — Perennial caulescent herbs, with opposite, alternate or verticillate leaves, which are often dotted with minute oblong or linear vesicles, containing a dark terebinthine matter. Flowers axillary and solitary or racemose, mostly yellow.

1. LYSIMACHIA STRICTA, *Ait.* *Racemed Loosestrife.*

Stem erect, smooth; leaves opposite, lanceolate, tapering at the base, nearly sessile, dotted; flowers in a long loose terminal raceme; pedicels long and slender. — *Ait. Kew.* (ed. 1.) 1. *p.* 199; *Bigel. fl. Bost. p.* 76; *Torr. fl.* 1. *p.* 210; *Beck, bot. p.* 290; *Darlingt. fl. Cest. p.* 123; *Hook. fl. Bor.-Am.* 2. *p.* 122; *Duby in DC. prodr.* 8. *p.* 64. L. racemosa, *Lam. enc.* 3. *p.* 571; *Michx. fl.* 1. *p.* 128; *Pursh, fl.* 1. *p.* 135; *Bart. fl. N. Am. t.* 1. L. bulbifera, *Curt. bot. mag. t.* 104. Viscum terrestre, *Linn.*

Whole plant smooth. Stem erect, 1 – 2 feet high, with a few short branches. Leaves 2 – 3 inches long and 5 – 8 lines wide, often with small bulbs or abortive branches in the axils, marked with numerous small oblong black dots or glands, which are imbedded in the substance of the leaf. Raceme 3 – 8 inches long, many-flowered; the pedicels half an inch or more in length, slender, with a linear-subulate bract at the base. Segments of the calyx lanceolate, acute. Corolla about three times as long as the calyx, yellow, with purple lines; the lobes lanceolate-oblong. Stamens unequal (two shorter), without intermediate teeth:

filaments glandular-hairy, united into a ring at the base. Capsule nearly globose, 5-valved; the valves entire, spotted with purple, by abortion 5-seeded.

Wet grounds; common. July. The axillary bodies resembling buds which sometimes occur in this species, are certainly abortive branches. They vary in length from a line to half an inch or more, and are seldom found except in sterile specimens.

2. LYSIMACHIA QUADRIFOLIA, *Linn.* *Whorled Loosestrife.*

Stem simple; leaves whorled, mostly in fours and fives, ovate-lanceolate, acuminate, nearly sessile, punctate; peduncles axillary, filiform, one-flowered, as numerous as the leaves; lobes of the corolla ovate-oblong, obtuse, entire. — *Linn. sp.* 1. *p.* 147; *Lam. ill. t.* 105. *f.* 2; *Pursh, fl.* 1. *p.* 135; *Ell. sk.* 1. *p.* 233; *Nutt. gen.* 1. *p.* 121; *Bigel. fl. Bost. p.* 75; *Torr. fl.* 1. *p.* 210; *Beck, bot. p.* 290; *Darlingt. fl. Cest. p.* 124; *Duby in DC. prodr.* 8. *p.* 64. L. hirsuta, *Michx. fl.* 1. *p.* 127. L. punctata, *Walt. fl Car. p.* 92.

Stem 1 – 2 feet high, erect, slightly hairy. Leaves usually in whorls of fours, but sometimes in threes, fives, sixes and even sevens, marked with numerous black oblong dots as in the preceding species. Peduncles 1 – 1½ inch long, very slender. Calyx 5-parted: segments linear-lanceolate, acute. Corolla large, yellow; the lobes sometimes slightly acuminate, crenulate. Stamens unequal (2 shorter): filaments dilated and united into a short tube at the base, glandular-hairy, without intermediate teeth. Capsule 5-valved, 5-seeded.

Thickets and low grounds; common. *Fl.* June – July. *Fr.* August.

3. LYSIMACHIA CILIATA, *Linn.* *Fringed Loosestrife.*

Stem smooth; leaves opposite (rarely in fours), on long ciliate petioles, subcordate-ovate, acuminate; peduncles mostly in pairs, one-flowered; flowers somewhat nodding; segments of the corolla crenulate, mucronate. — *Linn. sp.* 1. *p.* 147; "*Walth. hort. t.* 12;" *Michx. fl.* 1. *p.* 126; *Pursh, fl.* 1. *p.* 136; *Ell. sk.* 1. *p.* 233; *Bigel. fl. Bost. p.* 74; *Torr. fl.* 1. *p.* 210; *Beck, bot. p.* 290; *Darlingt. fl. Cest. p.* 124; *Duby in DC. prodr.* 8. *p.* 64. L. quadrifolia, *β.* ciliata, *Willd. sp.* 1. *p.* 818.

Stem 1 – 2 feet high, with a few short branches near the middle. Leaves 3 – 5 inches long and 1 – 2 inches wide, usually more or less cordate at the base, smooth, not punctate; the margin serrulate-scabrous: petioles 6 – 10 lines long, the fringing hairs extending round the stem. Peduncles 1 – 2 inches long, produced from short axillary branches. Flowers nearly three-fourths of an inch in diameter. Segments of the calyx lanceolate, acuminate. Corolla pale yellow; the lobes ovate, often with a short acumination, minutely glandular. Stamens nearly equal: filaments glandular, inserted into a narrow purple ring at the base of the corolla, with intermediate subulate teeth: anthers linear-oblong, at length recurved. Capsule globose-ovate, splitting longitudinally and somewhat irregularly into two valves when mature, but not in the direction of the sutures. Seeds 15 – 20.

Moist thickets and borders of woods. *Fl.* June – July. *Fr.* August.

4. LYSIMACHIA HYBRIDA, *Michx.* *Hybrid Loosestrife.*

Stem smooth; leaves opposite, on longish slightly ciliate petioles, lanceolate, acute at each end; peduncles mostly in pairs, one-flowered; flowers somewhat nodding. — *Michx. fl.* 1. *p.* 126; *Pursh, fl.* 1. *p.* 136; *Torr. fl.* 1. *p.* 211; *Bigel. fl. Bost. p.* 75; *Beck, bot. p.* 290; *Darlingt. fl. Cest. p.* 125; *Hook. fl. Bor.-Am.* 2. *p.* 122. L. heterophylla, *Nutt. gen.* 1. *p.* 121, not of *Michx.*

Stem 1 – 2 feet high, branching above, angular. Leaves 2 – 3 inches long and 4 – 6 lines wide, tapering at the base into a petiole, not dotted; the margin rough, but not serrulate. Peduncles from the leafy summits of the branches, about an inch long. Calyx-segments lanceolate, acute. Corolla pale yellow, smaller than in the preceding species, minutely glandular at the base: segments abruptly acuminate, crenulate. Stamens as in *L. ciliata.*

Wet grassy meadows and borders of salt marshes. *Fl.* July – August. Nearly allied to the preceding species, but I have never met with intermediate forms. It is readily distinguished by its narrower leaves, which are acute at the base, and the less ciliate petioles.

5. LYSIMACHIA LONGIFOLIA, *Pursh.* *Revolute Loosestrife.*

Stem quadrangular, branched above; leaves opposite, sessile, narrowly linear, revolute on the margin, not dotted; peduncles 1-flowered, somewhat terminal, nodding. — *Pursh, fl.* 1. *p.* 135; *Duby in DC. prodr.* 8. *p.* 63. L. revoluta, *Nutt. gen.* 1. *p.* 122; *Torr. fl.* 1. *p.* 212; *Beck, bot. p.* 291; *Hook. fl. Bor.-Am.* 2. *p.* 122.

Plant smooth. Stem 12 – 18 inches high. Leaves somewhat coriaceous; the radical ones spatulate, on long petioles; those of the stem about 3 inches long and 2 lines broad, with smaller ones in the axils, giving them the appearance of being verticillate. Peduncles mostly at the summit of the stem and at the extremity of the branches, slender. Segments of the calyx ovate-lanceolate, acuminate. Corolla yellow; the lobes broadly ovate, abruptly acuminate, undulate. Stamens nearly equal: filaments . . . . . with intermediate teeth: anthers linear-oblong, very large. Capsule 5-valved, many-seeded.

On calcareous rocks about the Falls of Niagara (*Dr. Eddy, Mr. Cooper & Dr. Sartwell*). August. A very ornamental species.

6. LYSIMACHIA THYRSIFLORA, *Linn.* *Tufted Loosestrife.*

Nearly smooth; stem simple; leaves opposite, sessile, lanceolate, dotted; flowers in axillary pedunculate capitate racemes, 5 – 7-parted. — *Linn. sp.* 1. *p.* 147; *Michx. fl.* 1. *p.* 127; *Engl. bot. t.* 761; *Bigel. fl. Bost. p.* 74. L. capitata, *Pursh, fl.* 1. *p.* 135; *Torr. fl.* 1. *p.* 212; *Beck, bot. p.* 290. Naumbergia thyrsiflora, *Duby in DC. prodr.* 8. *p.* 60.

Stem assurgent, 1 – 2 feet high, terete, sometimes a little pubescent; the lower and submerged part jointed, naked or with scales instead of leaves. Leaves 3 – 6 inches long and from half an inch to an inch or more broad, minutely dotted with black glands, slightly villous

underneath. Racemes ovate or capitate, about an inch long; the peduncle villous, an inch or more in length. Calyx 6 – 7- (rarely 5-) parted, spotted with orange: segments linear-lanceolate. Corolla yellow, deeply divided into 6 or 7 linear segments, which are often scarcely at all spotted. Stamens 6 – 7, longer than the corolla: filaments slender, smooth, united into a very short tube at the base, the intermediate teeth very minute: anthers small, ovate. Ovary globose-ovate, spotted: style slender, about as long as the stamens: stigma capitate. Capsule 5-valved, 5-seeded.

Swamps, particularly where Sphagnum abounds; not common. June. This agrees in all essential characters with the European plant. Endlicher and Duby have revived the old genus NAUMBERGIA, which was established on this plant, but I think it is scarcely more than a section of LYSIMACHIA. The intermediate teeth or abortive stamens differ much in different species, and in some they are wanting.

3. TRIENTALIS. *Linn.; Endl. gen.* 4208. *CHICKWEED WINTERGREEN.*

[From the Latin, *trions*, the third part of a thing; but the application of the name is not apparent.]

Calyx 6 – 8-parted, spreading. Corolla rotate, 6 – 8-parted. Stamens 6 – 8: filaments slender: anthers oblong or linear. Ovary globose: style filiform: stigma obtuse. Capsule globose, somewhat fleshy, 5-valved; the valves revolute and deciduous. Seeds few, with a reticulate membranaceous testa.— Humble, smooth, perennial herbs, with entire ovate or lanceolate leaves which are mostly aggregated in a whorl at the summit of the simple stem. Peduncles one-flowered, slender, arising from the bosom of the leaves.

1. TRIENTALIS AMERICANA, *Pursh.* *Chickweed Wintergreen.*

Leaves all terminal, lanceolate, acuminate, minutely serrulate; lobes of the corolla acuminate.— *Pursh, fl.* 1. *p.* 256; *Bigel. fl. Bost. p.* 145; *Bart. fl. N. Am.* 2. *t.* 48; *Beck, bot. p.* 48; *Darlingt. fl. Cest. p.* 238; *Hook. fl. Bor.-Am.* 2. *p.* 121; *Duby in DC. prodr.* 8. *p.* 59. T. Europæa, *Michx. fl.* 1. *p.* 220, not of *Linn.* T. Europæa, *β.* angustifolia, *Torr. fl.* 1. *p.* 383.

Root (or rhizoma) creeping, throwing up simple erect slender stems about a span high. Leaves in a terminal imperfect whorl, with 2 – 3 smaller or scale-like ones on the stem, thin, tapering at the base, 6 – 8 lines wide, finely serrulate under a lens. Peduncles 3 – 4, filiform, 1 – 2 inches long. Calyx-segments subulate, cuspidate. Corolla white, deeply 7 – 8-parted; the segments obovate-lanceolate, nearly twice as long as the calyx. Stamens shorter than the corolla: filaments smooth: anthers linear, involute after flowering. Capsule about half the size of a peppercorn, very thin, coriaceous, . . .

Low shady woods, and in sphagnous swamps. *Fl.* May. *Fr.* July.

§ 2. ANAGALLIDEÆ, Endl. *Capsule opening transversely. Seeds amphitropous.*

4. ANAGALLIS. *Linn.; Endl. gen.* 4213. *PIMPERNEL.*

[From the Greek, *anagelco*, to laugh; from its supposed exhilarating qualities.]

Calyx 5-parted. Corolla rotate, deeply 5-parted. Stamens 5: filaments hairy. Capsule globose, opening horizontally all round. Seeds numerous. — Herbs, with square mostly procumbent stems and opposite entire leaves. Peduncles axillary, opposite, one-flowered, without bracts. Corolla blue or red.

1. ANAGALLIS ARVENSIS, *Linn.* *Scarlet Pimpernel. Red Chickweed.*

Stem procumbent; leaves ovate, sessile, dotted underneath; segments of the corolla crenate, and glandular-ciliate on the margin.—*Linn. sp.* 1. *p.* 148; *Engl. bot. t.* 529; *Pursh, fl.* 1. *p.* 135; *Ell. sk.* 1. *p.* 235; *Bigel. fl. Bost. p.* 74; *Torr. fl.* 1. *p.* 209; *Beck, bot. p.* 291; *Darlingt. fl. Cest. p.* 123; *Duby in DC. prodr.* 8. *p.* 69.

Annual. Stem 4 – 12 inches long, branching, smooth. Leaves about half an inch long, often clasping, rather acute, with blackish dots underneath. Flowers on axillary peduncles, which are longer than the leaves, and at length recurved. Calyx-segments lanceolate-subulate, rough on the margin. Corolla scarlet with a purple centre, longer than the calyx. Stamens scarcely half the length of the corolla: filaments purple. Capsule spherical, smooth; the upper portion separating from the lower like the lid of a box.

Sandy fields, cultivated grounds; rather common, particularly near New-York, and on Long Island and Staten Island. Introduced from Europe. June – October. The flowers open about 8 o'clock in the morning, and close about 2 o'clock in the afternoon: hence the plant is often called the *Poor-man's Weatherglass.*

§ 3. HOTTONIEÆ, Endl. *Capsule opening by valves. Seeds anatropous.*

5. HOTTONIA. *Linn.; Endl. gen.* 4214. *WATER-FEATHER.*

[In honor of PIERRE HOTTON, a Professor of Leyden, who lived in the 17th century.]

Calyx deeply 5-parted. Corolla salver-form, 5-lobed. Stamens 5, included, inserted on the tube of the corolla. Stigma globose. Capsule globose; the valves cohering at the base and apex. Seeds numerous. — Aquatic herbs, with pectinate submerged leaves. Scapes jointed. Flowers white or pale purple, verticillate.

1. HOTTONIA INFLATA, *Ell.* *American Water-feather.*

Internodes of the scape inflated; whorls 3 – 5-flowered, the flowers pedicellate.—*Ell. sk.* 1. *p.* 234; *Nutt. gen.* 1. *p.* 120; *Torr. fl.* 1. *p.* 216; *Bigel. fl. Bost. p.* 77; *Beck, bot. p.* 289; *Duby in DC. prodr.* 8. *p.* 33. ? H. palustris, *Pursh, fl.* 1. *p.* 120; *Muhl. cat. p.* 19.

Stem submerged, spongy. Leaves numerous, irregularly disposed, 2 – 5 inches long, pectinately cut into numerous long narrow segments. Scapes or peduncles several (2 – 8), partly emersed, arising from the summit of the stem and 3 – 8 inches long, divided into several hollow joints, the lowest of which is much the longest and ventricose-clavate; the others more or less inflated. Flowers small, on pedicels 2 – 3 lines long. Calyx 5-parted nearly to the base; the segments lanceolate-linear. Bracts linear, obtuse. Corolla shorter than the calyx, white, scarcely more than two lines long; the segments obtuse or emarginate. Stamens shorter than the tube of the corolla: anthers ovate. Style short: stigma large. Capsule much shorter than the calyx. Seeds 60 or more, oval, scarcely angular, shining, inserted on a globose placenta.

Shallow stagnant waters. Ponds in several parts of Westchester county (*Dr. Mead*). *Fl.* July. Differs from *H. palustris*, in the inflated internodes, longer calyx, etc.

§ 4. SAMOLEÆ, Endl. *Capsule half superior, opening by valves. Seeds anatropous.*

6. SAMOLUS. *Tourn.; Endl. gen.* 4215. *WATER PIMPERNEL.*

[Said to be derived from the Island of *Samos*, because gathered there by Valerandus, a botanist of the 16th century.]

Tube of the calyx adhering to the lower half of the ovary, 5-cleft. Corolla campanulate-salverform, 5-lobed, with five scales or abortive stamens in the throat alternating with the lobes. Fertile stamens 5, included. Style short: stigma obtuse. Seeds numerous. — Herbs, with alternate entire leaves, and small white flowers in terminal racemes or corymbs.

1. SAMOLUS VALERANDI, *Linn.* *Common Water Pimpernel.*

Stem erect; leaves obovate; racemes elongated; pedicels bracteolate near the middle. — *Linn. sp.* 1. *p.* 177; *Engl. bot. t.* 703; *Michx. fl.* 1. *p.* 109; *Pursh, fl.* 1. *p.* 158; *Ell. sk.* 1. *p.* 263; *Torr. fl.* 1. *p.* 216; *Bigel. fl. Bost. p.* 84; *Beck, bot. p.* 291; *Darlingt. fl. Cest. p.* 595; *Duby in DC. prodr.* 8. *p.* 73.

Perennial. Stem 6 – 10 inches high, slender, smooth, simple or with a few branches above. Leaves about an inch long, somewhat fleshy, tapering at the base into a short petiole. Raceme many-flowered; the pedicels slender, elongated, with a minute subulate bract near the middle. Flowers scarcely more than a line in diameter. Segments of the calyx acute. Corolla nearly twice as long as the calyx; the lobes obtuse. Filaments very short: anthers cordate. Capsule roundish-obovoid, bursting at the summit, with 5 spreading teeth. Seeds roundish.

Wet grounds; rather common in the vicinity of salt water; rare in the western counties. *Fl.* July – September. This plant is a native of most parts of the world.

GROUP 7. *Ovary free, one-celled, with a single ovule; or 2-celled, with several ovules attached to a thick central placenta. Stamens as many as the lobes of the regular corolla, or the nearly distinct petals.*

ORDER LXII. PLANTAGINACEÆ. *Juss.* THE PLANTAIN TRIBE.

Calyx 4-cleft, persistent. Corolla tubular or urn-shaped, membranaceous and persistent; the limb 4-parted. Stamens 4, inserted into the tube of the corolla, and alternate with its segments; the filaments usually long and flaccid: anthers versatile. Ovary 2- or rarely 4-celled: style single. Fruit a membranaceous capsule, opening transversely, with the cells 1- or several-seeded, or a bony 1-seeded nucule. Seeds peltate. — Herbs or rarely suffruticose plants, with short stems, and the leaves mostly radical and ribbed. Peduncles radical. Flowers in spikes, small, destitute of beauty.

1. PLANTAGO. *Linn.; Endl. gen.* 2170. *PLANTAIN.*

[A name of uncertain origin.]

Flowers complete. Calyx deeply 4-parted (rarely 3-parted). Corolla tubular; the limb reflexed. Stamens mostly very long. Capsule 2 – 4-celled, membranaceous, opening transversely. Testa of the seed mucilaginous. Embryo cylindrical, in the axis of dense fleshy albumen. — Herbaceous plants, with the leaves mostly radical, and the flowers in dense spikes.

* *Cells of the capsule many-seeded.*

1. PLANTAGO MAJOR, *Linn.* *Broad leaved* or *Common Plantain.*

Leaves ovate or oval, smoothish, somewhat toothed, usually shorter than the petioles; scape terete; spike cylindrical or a little tapering, slender; flowers imbricated.—*Linn. sp.* 1. *p.* 42; *Engl. bot. t.* 1558; *Pursh, fl.* 1. *p.* 98; *Bigel. fl. Bost. p.* 51; *Torr. fl.* 1. *p.* 183; *Beck, bot. p.* 293; *Darlingt. fl. Cest. p.* 110.

Perennial. Leaves 4 – 6 inches or more in length and 3 – 4 broad, about 5-nerved, sometimes pubescent, with coarse obscure teeth. Scapes several, 10 – 18 inches long. Spikes 3 – 10 inches long. Bracts shorter than the calyx. Segments of the calyx ovate, acute, carinate. Corolla urn-shaped, whitish; the segments acute, reflexed. Stamens twice as long as the corolla. Capsule ovoid-oblong, rather acute.

Fields, road-sides, etc.; common. Introduced from Europe. May – August. The leaves are often used for dressing blisters.

** *Cells of the capsule* 1-*seeded.*

2. PLANTAGO CORDATA, *Lam.* *Heart-leaved Plantain.*

Plant very smooth; leaves broadly ovate, cordate, obscurely toothed; spike elongated, loosely imbricate, the lower flowers scattered; bracts and calyx-segments roundish-ovate, obtuse; seeds membranaceously margined. — *Lam enc.* 5. *p.* 369; "*Jacq. eclog. fasc.* 8. *p.* 106. *t.* 72," ex *Rem. & Schult.* 3. *p.* 114; *Pursh, fl.* 1. *p.* 98; *Muhl. cat. p.* 15; *Torr. fl.* 1. *p.* 182; *Beck, bot. p.* 292. P. Kentuckensis, *Michx. fl.* 1. *p.* 94.

Perennial. Leaves 3 – 6 inches long and 2 – 4 inches wide, thin, usually cordate at the base, obtuse: petiole longer than the lamina. Scapes 12 – 18 inches high (including the spike), thick and somewhat succulent. Bracts concave, shorter than the flowers. Segments of the corolla ovate, reflexed. Stamens 2 – 3 times as long as the corolla: anthers very large. Style slightly pubescent. Capsule globose-ovoid, apiculate; the dissepiment separating at maturity. Seeds 2, oval, flat on the face, convex on the back, with a distinct membranaceous border.

Borders of creeks, wet meadows, etc. Manhattanville on the Island of New-York, and near Fishkill in Dutchess county. June – July. A rare plant in the Northern States, but frequent in Kentucky, Ohio, &c.

3. PLANTAGO LANCEOLATA, *Linn.* *Rib-grass. English Plantain.*

Leaves lanceolate, acute at each end; spike short and dense, ovate-cylindrical; scape elongated, grooved; the two lower sepals confluent to the summit. — *Linn. sp.* 1. *p.* 113; *Engl. bot. t.* 507; *Pursh, fl.* 1. *p.* 98; *Torr. fl.* 1. *p.* 184; *Bigel. fl. Bost. p.* 51; *Beck, bot. p.* 293; *Darlingt. fl. Cest. p.* 110.

Perennial. Leaves 4 – 8 inches long and about an inch wide, strongly 3 – 5-nerved, smoothish or a little pubescent, remotely denticulate, tapering at the base into a petiole. Scape much longer than the leaves, deeply grooved. Spike usually about an inch long. Bracts ovate, acuminate, brownish. Calyx consisting of apparently three sepals, which are scarcely united at the base, but the lower two are combined into one, which is oval, emarginate, and marked with two distinct lines or heels; the two upper sepals are narrower, with a single line in the middle, and hairy towards the summit. Segments of the corolla ovate, very acute, at length reflexed. Stamens very long. Capsule roundish-obovate. Seeds oblong, concavo-convex, shining.

Fields and upland meadows; very common. Introduced from Europe. May – October. This plant is eaten by all kinds of stock, and in some countries it is cultivated for herbage, but in general it is lightly esteemed by agriculturalists.

4. PLANTAGO VIRGINICA, *Linn.* *White Plantain.*

Biennial; whole plant hoary-pubescent; leaves obovate-lanceolate, remotely and obscurely denticulate; spike cylindrical, with the flowers rather distant; segments of the corolla erect. — *Linn. sp.* 1. *p.* 113; *Michx. fl.* 1. *p.* 94; *Pursh, fl.* 1. *p.* 98; *Ell. sk.* 1. *p* 201; *Torr. fl.* 1. *p.* 183; *Beck, bot. p.* 293; *Darlingt. fl. Cest. p.* 110.

Root fibrous. Leaves 2 – 3 inches long and about an inch wide, obtuse, 3 – 5-nerved, attenuated at the base into a short petiole. Scape longer than the leaves, clothed with spreading hairs. Spike at first short, but in fruit 2 – 4 inches long. Flowers slightly imbricated. Calyx as long as the lanceolate bract; the two lower segments narrower than the others. Corolla yellowish; the segments lanceolate, acute, erect or connivent. Stamens (always?) included. Style hairy. Capsule ovoid. Seeds plano-convex, bordered.

Sandy fields and stony hill-sides; rare in the interior of the State. May – June. This species seems (occasionally at least) to be polygamous or diœcious by abortion. In many of the flowers that I have examined, the stamens were sterile, but the seeds were matured.

5. PLANTAGO MARITIMA, *Linn.* *Sea Plantain.*

Leaves linear, grooved, fleshy, hairy near the base; scape terete; spike cylindrical; bracts rather acute. — *Linn. sp.* 1. *p.* 113; *Engl. bot. t.* 175; *Michx. fl.* 1. *p.* 94; *Pursh, fl.* 1. *p.* 99; *Bigel. fl. Bost. p.* 52; *Torr. fl.* 1. *p.* 184; *Beck, bot. p.* 293; *Hook. fl. Bor.-Am.* 2. *p.* 123.

Root perennial, thick and somewhat woody. Leaves 2 – 5 inches long and 1 – 2 lines wide, rounded on the under side, deeply channelled above; the margin entire. Scape variable in length, sometimes shorter, at other times longer than the leaves. Spike 1 – 3 inches long; the flowers loosely imbricated, at length somewhat remote. Bracts about as long as the calyx, ovate, sometimes obtuse. Segments of the calyx obtuse; those of the corolla acute and reflexed. Stamens exserted. Capsule ovoid. Seeds elliptical.

Salt-marshes, Long Island; also on the Island of New-York, and in Westchester county. July – September. A native also of Europe.

6. PLANTAGO PUSILLA, *Nutt.* *Dwarf Plantain.*

Annual, minutely pubescent; leaves linear-subulate, flat, entire, acute; scape terete, slender, longer than the leaves; spike cylindrical, loosely flowered; bracts ovate, acute, as long as the calyx; stamens included. — *Nutt. gen.* 1. *p.* 100; *Torr. fl.* 1. *p.* 184. P. hybrida, *Bart. fl. Philad.* 2. *p.* 214, *and fl. N. Am. t.* 98. *f.* 1. P. linearifolia, *Muhl. cat. p.* 15?

Root fibrous. Leaves from half an inch to an inch in length, and scarcely half a line wide. Scape 1 – 3 inches high, very slender; the flowers often somewhat remote. Sepals obovate,

obtuse. Segments of the corolla ovate, acute, erect. Stamens only two in all the specimens that I examined. Style short, pubescent. Capsule ovoid, 2-seeded. Seeds oval, not margined.

Sterile rocky hills on the Island of New-York, particularly in the neighborhood of Bloomingdale. April – May. Probably the smallest species of the genus, the scape often flowering when scarcely more than half an inch high. It is widely diffused to the west, extending to the upper Missouri.

ORDER LXIII. PLUMBAGINACEÆ. *Juss.* THE LEADWORT TRIBE.

Calyx tubular, plaited, 5-toothed, scarious, persistent. Corolla salver-form, with the limb 5-parted, or of five nearly distinct unguiculate petals. Stamens 5, inserted on the receptacle when the petals are combined, but inserted into the claws of the petals when these are distinct. Ovary one-celled, with a single ovule suspended from a cord arising from the bottom of the cell: styles 5, united nearly to the top when the corolla is monopetalous, distinct when the petals are separate. Fruit an utricle, or capsular and opening at the summit by five valves. Seed oblong. Embryo in the midst of scanty albumen: cotyledons oblong.—Perennial herbs or undershrubs. Leaves alternate, entire or rarely toothed, mostly crowded about the root, and clasping or sheathing. Flowers usually on scapes, which are simple or branching, each with 2 – 3 bracts at the base.

1. STATICE. *Linn.; Endl. gen.* 2172. *MARSH ROSEMARY.*

[From the Greek, *statizo*, to arrest; because, from its astringent qualities, it stops diarrhœa.]

Calyx funnel-form, 5-toothed. Corolla 5-petalled or deeply 5-parted. Stamens inserted on the claws of the petals. Styles distinct. Fruit a membranaceous utricle. — Leaves all radical, from the summit of the rhizoma. Scapes branching; the flowers in secund spikes.

1. STATICE LIMONIUM, *Linn.* *Common Marsh Rosemary.*

Scape terete, paniculately branched; leaves obovate-lanceolate, petiolate, mucronate, smooth; calyx with lanceolate acute segments and intermediate teeth.—*Linn. sp.* 1. *p.* 274; *Engl. bot. t.* 102; *Ell. sk.* 1. *p.* 374; *Torr. fl.* 1. *p.* 329; *Beck, bot. p.* 292. S. Caroliniana, *Walt. fl. Car. p.* 118; *Pursh, fl.* 1. *p.* 212; *Bigel. med. bot.* 2. *p.* 51. *t.* 25, *and fl. Bost. p.* 124; *Hook. fl. Bor.-Am.* 2. *p.* 123.

Rhizoma thick, fusiform or branched, fleshy or somewhat woody, very astringent. Leaves growing in a radical tuft, 4 – 8 inches long and three-fourths of an inch to an inch and a hal

wide; the midrib prominent, but the veins indistinct, with a small recurved mucro at the tip; the margin either flat or undulate. Scape longer than the leaves, nearly terete, striate, with several lanceolate clasping scales. Flowers in a corymbose panicle, sessile, erect, usually two together with a clasping bract at the base, the upper one expanding first. Calyx colored; the segments minutely toothed; the intermediate teeth sometimes wanting. Corolla pale purple; the petals spatulate. Ovary obovate, with five spreading filiform styles.

Salt-marshes. Long Island, on the Island of New-York, and in Westchester county as far as the salt water reaches. August – October. The root is a valuable astringent, and is kept in the shops. (See *Bigelow, l. c.*, and *Wood & Bache's U. S. Dispens.*)

GROUP 8. *Ovary free, 1 – 2- (sometimes spuriously 4-) celled, with numerous ovules. Corolla 2-lipped or irregular; the stamens inserted upon its tube, and mostly fewer than its lobes, or often didynamous.*

ORDER LXIV. LENTIBULACEÆ. *L. C. Rich.* THE BLADDERWORT TRIBE.

Calyx of two sepals, or unequally 5-parted. Corolla very irregular, 2-lipped, personate; the tube very short, spurred. Stamens 2, inserted on the upper lip of the corolla: anthers one-celled. Ovary one-celled, with a free central placenta and numerous ovules: style single; stigma mostly 2-lipped. Fruit a capsule. Seeds without albumen. — Herbaceous plants, growing in water or wet places, with the flowers on scapes. Leaves radical and entire, or submersed and divided into numerous root-like branches, and then usually furnished with small oval air-bladders by which the plant is suspended in the water.

1. PINGUICULA. *Tourn.; Endl. gen.* 4195. *BUTTERWORT.*

[From the Latin, *pinguis*, fat; the leaves being thick and greasy to the touch.]

Calyx 4 – 5-parted, unequal. Corolla 2-lipped, spurred at the base underneath. Stamens 2, included: filaments ascending: anthers transversely 2-valved.— Perennial herbs, growing in wet places. Leaves in a radical spreading cluster, entire, fleshy, very smooth. Scape naked, one-flowered. Flowers showy.

1. PINGUICULA VULGARIS, *Linn.* *Common Butterwort.*

Segments of the corolla very unequal, rounded, entire, veinless; the stamens subulate-

cylindrical, as long as the corolla.—*Linn. sp.* 1. *p.* 17 ; *Engl. bot. t.* 70 ; *Beck, bot. p.* 286 ; *Hook. fl. Bor.-Am.* 2. *p.* 118 ; *Alph. DC. in prodr.* 8. *p.* 28. P. acutifolia, *Michx. fl.* 1. *p.* 11 ?

Root fibrous. Leaves forming a radical cluster, obovate-oblong, fleshy, obtuse, involute on the margin. Scape 3 – 5 inches high. Flower purple, drooping. Upper lip of the corolla smaller than the lower, 2-lobed ; lower lip unequally 3-lobed : palate covered with white hairs.

Wet rocks about Genesee Falls, Rochester. May. Michaux's specimens of *P. pumila* were only gathered in fruit, but they almost certainly belong to this species. A very rare plant within the limits of the United States, having hitherto been found only in New-York, Michigan and Wisconsin. It is a common species in Europe.

2. UTRICULARIA. *Linn. ; Endl. gen.* 4193. *BLADDERWORT.*

[So named from *utriculus*, a little bladder ; the submerged leaves of many species being furnished with air-vesicles.]

Calyx of two nearly equal entire sepals. Corolla personate, spurred at the base underneath. Stamens 2 : filaments connivent, incurved : anthers often constricted in the middle, opening longitudinally. — Herbaceous (always perennial ?) plants, growing in water or in very wet places ; the radical submersed leaves furnished with small air-bladders, which at first are filled with water ; but about the flowering time, this is replaced with air, so as to raise the scape out of the water. After flowering, the air escapes, and the plant sinks to ripen its fruit at the bottom. Roots often confounded with the leaves. The scapes are naked, or furnished with a few scales ; and the flowers are in racemes, spikes, or solitary.

1. UTRICULARIA INFLATA, *Walt.* *Spongy-leaved Bladderwort.*

Floating ; upper leaves verticillate, with inflated and spongy petioles, dichotomously branching at the extremity and furnished with air-bladders ; lower lip of the corolla 3-lobed ; spur conical, flattened, emarginate. — *Walt. fl. Car. p.* 54 ; *Ell. sk.* 1. *p.* 20 ; *Torr. fl.* 1. *p.* 18 ; *Bigel. fl. Bost. p.* 8 ; *Alph. DC. in prodr.* 8. *p.* 4. U. ceratophylla, *Michx. fl.* 1. *p.* 12 ; *Pursh, fl.* 1. *p.* 15 ; *Le Conte, N. Amer. Utric. in ann. lyc. N. Y.* 1. *p.* 73. *t.* 6. *f.* 1 ; *Beck, bot. p.* 286.

Perennial. Stem long and slender. Lower leaves (roots ?) finely divided, and furnished with air-bladders : uppermost leaves 4 – 6 in a whorl near the surface of the water ; the petiole oblong-cylindrical, finely branched at the extremity, of a delicate spongy texture. Scape 6 – 8 inches long, 5 – 7-flowered ; the lower pedicels elongated, so as to give the flowers a corymbose appearance. Sepals ovate, concave. Corolla yellow, about three-fourths of an inch in diameter ; upper lip broadly ovate, obscurely lobed or crenate ; lobes of the lower lip crenate : spur about half the length of the lower lip, to which it is appressed, marked with three striæ. Fruit nodding.

Ponds on Long Island ; not found hitherto in any other part of the State. *Fl.* August.

2. UTRICULARIA PURPUREA, *Walt.* *Purple Bladderwort.*

Floating; leaves (or roots?) verticillately branched, the capillary branches furnished with air-bladders; scapes mostly 1- (sometimes 2 – 3-) flowered; upper lip of the corolla truncate and emarginate, the lower 3-lobed, the lateral lobes concave; spur conical, flattened, entire, appressed to the lower lip, and half its length.—*Walt. fl. Car. p.* 64; *Pursh, fl.* 1. *p.* 15; *Nutt. gen.* 1. *p.* 13; *Torr. fl.* 1. *p.* 20; *Bigel. fl. Bost. p.* 8; *Le Conte, l. c. p.* 77. *f.* 9; *Beck, bot. p.* 288; *Alph. DC. in prodr.* 8. *p.* 5. U. saccata, *Ell. sk.* 1. *p.* 21.

Stem often 2 – 3 feet long. Scapes 2 – 4 inches long, axillary, naked. Sepals obtuse or emarginate. Corolla purple; the lower lip large, and moderately lobed; the middle lobe pressed upperward by the spur: palate small.

In the State of New-York (*Nuttall*). I have not found this species within our limits; but there can be little doubt that it grows in some of the ponds on Long Island, as it is common in the neighboring parts of New-Jersey. *Fl.* August.

3. UTRICULARIA VULGARIS, *Linn.* *Common Bladderwort.*

Floating; stems branching; leaves many-parted, furnished with air-bladders; scapes 5 – 9-flowered, bracteate; upper lip of the corolla entire or obscurely lobed, broadly ovate; lower lip entire, with the sides deflected; spur conical at the base, attenuated and entire at the tip, incurved. — *Linn. sp.* 1. *p.* 18; *Engl. bot. t.* 253; *Pursh, fl.* 1. *p.* 16; *Bigel. fl. Bost. p.* 8; *Torr. fl.* 1. *p.* 18; *Beck, bot. p.* 287; *Alph. DC. in prodr.* 8. *p.* 6. U. macrorhiza, *Le Conte, l. c. p.* 73. *f.* 2; *Darlingt. fl. Cest. p.* 7.

Stems often 2 – 4 feet long, branching. Scape 6 – 10 inches long, usually from 5- to 6-flowered. Leaves pinnately and dichotomously divided into numerous capillary segments, which are copiously supplied with air-bladders. Pedicels about half an inch long, with large ovate membranaceous bracts at the base, recurved after flowering. Calyx persistent; the sepals concave, obtuse; lower one somewhat emarginate. Corolla yellow, two-thirds of an inch in diameter; lower lip crenulate on the margin, faintly striate with red: palate large and prominent, striate with red. Style as long as the stamens: stigma 2-lipped; the upper lip small and truncate, the lower fringed.

Ponds and slowly flowing streams; rather common. *Fl.* June – July. *Fr.* August. I am not able to discover any essential difference between our plant and the *U. vulgaris* of Europe.

4. UTRICULARIA CORNUTA, *Michx.* *Sharp-horned Bladderwort.*

Scape rooting, erect, slender, strict and rather rigid, 2 – 3-flowered; the flowers sessile; lower lip of the corolla very broad, somewhat 3-lobed; spur very acute, projecting.—*Michx. fl.* 1. *p.* 12; *Pursh, fl.* 1. *p.* 16; *Nutt. gen.* 1. *p.* 14; *Bigel. fl. Bost. p.* 8; *Torr. fl.* 1. *p.* 20; *Beck, bot. p.* 287; *Alph. in DC. prodr.* 8. *p.* 22. U. personata, *Le Conte, l. c. p.* 77; *Beck, l. c.*

Annual? Scape rooting in wet ground, 8 – 12 inches high, furnished with minute appressed scales. Flowers closely approximated, as large as those of *U. vulgaris*. Pedicels with a small ovate bract, and two bracteoles at the base. Sepals ovate, acute, yellowish. Corolla of a firmer texture than in any other North American species, yellow; the upper lip reflexed at the sides; lower lip much larger: palate large and prominent: spur projecting from the flower, and rather dependent, very slender and tapering.

Wet grounds, particularly about calcareous rocks. Highlands of New-York; near Troy; about the Falls of Niagara, and sparingly in the northern and western counties. July – August.

5. UTRICULARIA STRIATA, *Le Conte.* *Striated Bladderwort.*

Floating, or sometimes rooting in mud; scape 4 – 7-flowered, slender, weak; upper lip of the corolla ovate-roundish, obscurely 3-lobed, somewhat emarginate, the margin waved; lower lip 3-lobed, reflexed at the sides, the intermediate lobe striate; spur straight, obtuse, shorter than the lower lip, and appressed to it. — *Le Conte in Torr. cat. pl. N. York, p.* 89 (1819), *and in ann. lyc. N. Y. l. c. f.* 4; *Torr. fl.* 1. *p.* 20; *Beck, bot. p.* 287; *Tuckerm. in Sill. jour.* 45. *p.* 29 (1843); *Alph. DC. in prodr.* 8. *p.* 8.

Annual? Leaves few and usually short, sparingly furnished with air-bladders. Scape 6 – 10 inches high, furnished with 2 or 3 minute scales. Pedicels half an inch or more in length. Flowers as large as in *U. vulgaris*, yellow. Margin of the corolla crenulate. Spur straight, a little dilated in the middle, emarginate.

Swamps and shallow waters. New-York (*Le Conte*); Long Island (*Mr. Willis*). *Fl.* July.

6. UTRICULARIA INTERMEDIA, *Heyne.* *Intermediate Bladderwort.*

Floating; scape 2 – 3-flowered; leaves distichous, dichotomously many-parted; segments setaceous, spinulous-denticulate; upper lip entire, twice as long as the palate; spur conical; peduncles of the fruit erect. — *Koch, syn. fl. Germ. p.* 579; *Richards. app. Frankl. narr. p.* 2; *Gray in ann. lyc. nat. hist. N. York,* 4. *p.* 227; *Engl. bot. t.* 3489; *Hook. fl. Bor.-Am.* 2. *p.* 118; *Tuckerm. l. c.; Alph. DC. in prodr.* 8. *p.* 7. U. Millefolium, *Nutt. mss.*

Perennial. Leaves oblong, cut into numerous segments like those of Yarrow. The air-bladders grow on separate root-like branches. Scapes 4 – 8 inches high. Flowers about half as large as in *U. vulgaris*, yellow.

Swamps, Jefferson county (*Dr. Crawe & Dr. Gray*). *Fl.* June – July. A northern species, agreeing in all respects with my European specimens.

7. UTRICULARIA MINOR, *Willd.* *Lesser Bladderwort.*

Floating; scape about 2-flowered; leaves somewhat 3-parted, the segments linear and dichotomous, the lower obovate-flattish; upper lip as long as the palate; spur very short, obtuse, keeled, deflexed.—*Willd. sp.* 1. *p.* 112; *Engl. bot, t.* 254; *Gray, l. c.; Alph. DC.*

in prodr. 8. *p.* 7. U. gibba, *Torr. fl.* 1. *p.* 19, not of *Linn.* U. fornicata, *Le Conte, l. c.?*

Perennial. Leaves furnished with air-bladders. Scape 2 – 3 inches high. Flowers scarcely one-fourth as large as in *U. vulgaris*, dull yellow. Lower lip nearly flat.

In ponds and swamps. Near Albany and Schenectady (*Dr. L. C. Beck & Mr. Tracy*). *Fl.* June. This species also is a native of Europe.

I have another species of UTRICULARIA, collected near Utica by Dr. Knieskern, which I am unable to determine, from the dried and rather imperfect specimens. Its general appearance is that of *U. vulgaris*, but the flowers are scarcely one-third as large as in that species. The spur is short, thick, and very obtuse. At the base of the scape, and along the submerged stem, there are scattered 1-flowered peduncles. The same plant has been found near Boston, by *B. D. Greene, Esq.*

ORDER LXV. OROBANCHACEÆ. *L. C. Rich.* THE BROOM-RAPE TRIBE.

Calyx persistent, 4 – 5-toothed or somewhat 2-lipped. Corolla withering or persistent, tubular or tubular-campanulate, with a 2-lipped or irregular limb. Stamens 4, didynamous. Ovary one-celled, with 2 – 4 parietal placentæ. Capsule enclosed in the persistent corolla, 2-valved. Seeds very numerous, minute. Embryo minute, at the apex of fleshy transparent albumen.—Parasitical herbs, growing on the roots of other plants, destitute of green foliage, and with brownish or colored scales instead of leaves. Flowers solitary or in spikes, sometimes polygamous.

1. OROBANCHE. *Linn.; Hook. fl. Bor.-Am.* 2. *p.* 91. *BROOM-RAPE.*

[From the Greek, *orobos*, a vetch or leguminous plant, and *anchein*, to strangle; from its supposed injurious effects.]

Flowers perfect. Calyx 2 – 5-cleft; the segments often unequal. Corolla tubular; the limb somewhat ringent: upper lip entire or 2-lobed, the lower 3-lobed. Anthers 2-celled. Stigma mostly 2-lobed. Capsule ovoid: placentæ 2 or 4.—Scapes mostly simple: flowers solitary or spiked.

* CONOPHOLIS, Wallr. *Flowers perfect. Calyx ventricose-tubular, with two bracteoles at the base, irregularly* 4 – 5-*toothed. Corolla ringent: upper lip* 2-*lobed; lower equally* 3-*lobed. Anther-cells somewhat diverging at the base, mucronate. Placentæ* 4, *approximated in pairs.*

1. OROBANCHE AMERICANA, *Linn.* *Squaw-root.*

Stem clothed with oval-lanceolate acute scales; flowers in a thick smooth spike; calyx unequally 4 – 5-cleft; corolla a little curved, unequally 5-lobed, ventricose below; stamens

longer than the corolla.—*Willd. sp.* 3. *p.* 351 ; *Walt. fl. Car. p.* 166 ; *Michx. fl.* 2. *p.* 26 ; *Pursh, fl.* 2. *p.* 431 ; *Nutt. gen.* 2. *p.* 58 ; *Ell. sk.* 2. *p.* 135 ; *Beck, bot. p.* 260 ; *Darlingt. fl. Cest. p.* 376. Conophilis Americana, *Endl. iconogr. t.* 81.

Perennial. Root roundish, composed of matted fleshy fibres. Plant 3 – 6 inches high, of a light brown color and usually growing in clusters, thick and fleshy, clothed with imbricated scales. Flowers sessile, with lanceolate bracts at the base. Calyx irregularly 4 – 5-cleft ; the segments lacerately toothed : upper lip much longer than the lower. Corolla rather longer than the calyx, yellowish-white. Anthers sagittate. Style scarcely exserted : stigma capitate. Capsule ovoid, acuminate.

Shady woods in rich soil, often forming patches a foot or more in diameter ; rather rare. On the Island of New-York, and in the Highlands of the Hudson ; Oriskany (*Mr. Vasey*) ; Greece, Monroe county (*Dr. Bradley*) ; Schoharie county (*Dr. Knieskern*). It is sometimes called *Cancer-root*, and was formerly in repute as a remedy for cancer. (See *Wood & Bache's U. S. Dispens. app.* 1098.)

** ANOPLANTHUS, Endl. *Calyx campanulate, 5-cleft. Corolla almost equally 5-lobed. Anther-cells distinct, mucronate. Placentæ* 4, *distant.—Stems short, with one or several elongated 1-flowered peduncles at the summit.*

2. OROBANCHE UNIFLORA, *Linn.* *Long-stalked Broom-rape.*

Stem very short, covered with oblong scales, usually with two single-flowered scape-like pubescent peduncles at the summit, the scales smoothish, concave ; calyx equally 5-cleft ; lobes of the corolla nearly equal, oblong-oval, entire, with a colored pubescent margin ; stamens included, smooth ; anthers ciliate. — *Linn. sp.* 2. *p.* 433 , *Walt. fl. Car. p.* 166 ; *Michx. fl.* 2. *p.* 26 ; *Pursh, fl.* 2. *p.* 431 ; *Ell. sk.* 2. *p.* 135 ; *Bigel. fl. Bost. p.* 244 ; *Beck, bot. p.* 260 ; *Darlingt. fl. Cest. p.* 377. O. biflora, *Nutt. gen.* 2. *p.* 59 ; *Hook. fl. Bor.-Am.* 2. *p.* 93. Anoplanthus uniflora, *Endl. iconog. t.* 72.

Root perennial, composed of matted fleshy fibres, which are attached to the living rootlets of other plants. Whole plant of a yellowish-white color. Stems usually fasciculate and somewhat branched, imbricated with scales. Peduncles 2 – 5 inches long, slender, viscidly pubescent, usually two together, but sometimes more, or solitary. Calyx deeply 5-cleft ; the segments linear-lanceolate. Corolla pubescent, incurved, three times as long as the calyx, marked with blue veins ; the segments fringed with a delicate blue border ; the palate with two yellow ridges. Stamens short : anthers white, sagittate. Stigma bilamellate. Capsule ovoid ; the numerous seeds attached to four narrow parietal placentæ.

Shady woods ; frequent. *Fl.* May – June. *Fr.* July.

2. EPIPHEGUS. *Nutt. gen.* 2. *p.* 60 ; *Endl. gen.* 4182. BEECH-DROPS.

[From the Greek, *epi*, upon, and *phegos*, the beech ; because it grows on the roots of that tree.]

Flowers polygamous ; the upper complete, but sterile ; the lower imperfect, fertile. STERILE FL. Calyx 5-toothed. Corolla tubular, compressed, curved ; upper lip emarginate ; lower lip 3-toothed. Stamens as long as the corolla. Style exserted : ovary abortive. FERTILE FL. Calyx 5-toothed. Corolla small, rarely expanding, 4-toothed, deciduous. Stamens 4, all but one usually sterile. Ovary with a glandular disk on one side of the base : placentæ 2, each 2-lobed. Capsule roundish-ovoid, gibbous, opening on the upper side. — Parasitic on the roots of Beech trees. Stem virgately branched ; the branches simple, slender, bearing scattered sessile flowers the whole length.

1. EPIPHEGUS AMERICANA, *Nutt.* *Beechdrops. Cancer-root.*

Nutt. l. c. ; Beck, bot. p. 260 ; *Darlingt. fl. Cest. p.* 377 ; *Hook. fl. Bor.-Am.* 2. *p.* 93 ; *Endl. iconogr. t.* 80. E. Virginiana, *Bart. fl. Phil.* 2. *p.* 50 ; *Torr. compend. p.* 244. Orobanche Virginiana, *Linn. sp.* 2. *p.* 633 ; *Michx. fl.* 2. *p.* 26 ; *Pursh, fl.* 2. *p.* 431 ; *Ell. sk.* 2. *p.* 136 ; *Bigel. fl. Bost. p.* 245.

Plant of a yellowish brown color, smooth, 6 – 10 inches high. Root somewhat tuberous and fleshy, throwing off short branching fragile fibres, some of which form a connexion with the roots of the beech, on which the plant is parasitic. Stem angular, branching from near the base ; the branches erect, with lanceolate appressed scales at the base. Flowers rather distant, scattered, nearly sessile ; the bracts acute. STERILE FL. Calyx short, membranaceous, with small acute teeth. Corolla half an inch long, slender, 2-lipped, white with purple striæ : lower lip without prominent ridges or palate underneath ; the teeth acute. Anthers pubescent ; the cells distinct, mucronate. Style simple, curved : stigma capitate. FERTILE FL. Calyx as in the sterile flowers. Upper part of the corolla at length separating from the base, and lifted up by the enlarging ovary like a calyptra. Ovary ovate, increasing in size with great rapidity after fertilization : style short, but distinct : stigma capitate. Capsule opening like a cup after the seeds are discharged. Seeds very numerous, pale yellow, oblong, striate.

Shady beech woods. *Fl.* September. *Fr.* October. The whole plant is astringent, and has long been celebrated as a remedy for cancers, dysentery and other diseases ; but its virtues are greatly overrated. (See *Wood & Bache, U. S. Dispens. app.* 1098.)

ORDER LXVI. BIGNONIACEÆ. *Juss.* THE TRUMPET-FLOWER TRIBE.

Calyx somewhat campanulate or spathaceous; the limb 5-lobed, 2-parted or 2-lipped. Corolla usually irregular, 4 – 5-lobed; the throat large. Stamens 5, unequal; one of them always, and sometimes three, sterile or rudimentary: when four are fertile, they are didynamous. Ovary 2-celled, with a fleshy annular disk at the base; the placenta in the axis: style single: stigma capitate or bilamellate. Capsule woody or coriaceous, pod-shaped, 2-valved, many-seeded. Seeds flatly compressed, usually winged, without albumen. Cotyledons large, roundish, leafy.

1. CATALPA. *Juss. p.* 138; *Endl. gen.* 4113. *INDIAN BEAN.*

[*Catalpa* is said to be a corruption of *catawba*, the Indian name of this tree.]

Calyx 2-parted. Corolla campanulate; the tube ventricose; border unequally 5-lobed. Stamens 2 fertile, and 2 or 3 abortive: cells of the anther spreading. Capsule elongated, pod-like, cylindrical: dissepiments contrary to the valves. Seeds membranaceous, margined, and finely lacerate at the extremity. — Trees. Leaves opposite or verticillate in threes, simple, cordate or oblong. Flowers in terminal panicles.

1. CATALPA SYRINGÆFOLIA, *Sims.* *Catalpa. Indian Bean.*

Leaves roundish-cordate, acuminate, entire, petiolate; flowers in panicles. — *Sims in bot. mag. t.* 1094; *Pursh, fl.* 1. *p.* 10. C. bignonioides, *Walt. fl. Car. p.* 64. C. cordifolia, "*Duham. arb. ed.* 2. *fasc.* 15. *t.* 5;" *Ell. sk.* 1. *p.* 24; *Nutt. gen.* 1. *p.* 10; *Torr. fl.* 1. *p.* 16; *Beck, bot. p.* 245; *Darlingt. fl. Cest. p.* 363. Bignonia Catalpa, *Linn. sp.* 2. *p.* 622; *Michx. fl.* 2. *p.* 25, *and f. arb.* 1. *p.* 329. *t.* 64.

A tree 20 – 30 feet high, with few large irregular branches, and bark of a light gray color. Leaves 5 – 8 inches in diameter, smooth above, pubescent underneath, especially on the veins; the petioles 3 – 6 inches long. Flowers large and showy, in pyramidal panicles, which are trichotomously branched. Segments of the calyx ovate, mucronate. Corolla white externally, handsomely variegated with yellow and purple inside; the lobes crenate and waved. Stamens sometimes didynamous, but usually 2 perfect and 3 small and sterile; the former incurved, and as long as the tube of the corolla. Capsule 6 – 12 inches long and about half an inch in diameter, pendulous, remaining on the tree all winter.

About habitations; introduced from the South, and nowhere indigenous in this State. *Fl.* July. *Fr.* October. The Catalpa is more esteemed for ornament than for use; but the wood is of a fine texture, and takes a good polish. It is of a grayish white color, and very light when seasoned.

ORDER LXVII. PEDALIACEÆ. *R. Br.* THE OIL-SEED TRIBE.

Calyx 5-cleft or 5-parted; the segments nearly equal. Corolla irregular; the tube ventricose; limb somewhat 2-lipped, 5-lobed. Stamens 4, didynamous (two of them sometimes sterile), with the rudiment of a fifth. Ovary seated on a glandular disk, formed of 2 carpels, 2-celled, or sometimes 1-celled from the dissepiments not reaching the axis; or with several (4 – 8) spurious cells, from adhesions between the placentæ and walls of the ovary: style single: stigma bilamellate. Ovules few or solitary in each spurious cell. Fruit indurated or drupaceous, often with a horn at the summit, which at length splits into two. Seeds few, large, pendulous or erect, not winged. Albumen none. Embryo straight. — Mostly viscid herbs, with opposite or alternate (often angular or sinuate) leaves and axillary flowers.

1. MARTYNIA. *Linn.; Endl. gen.* 4175. *MARTYNIA.*

[In honor of JOHN MARTYN, Professor of Botany in Cambridge, England.]

Calyx 5-cleft. Corolla somewhat campanulate. Fruit woody, corticate, 4-celled, with a long hooked beak, which splits into two horns at maturity: axis perforated. — Viscid annuals, with opposite or alternate leaves, and large axillary flowers.

1. MARTYNIA PROBOSCIDEA, *Willd.* *Unicorn-plant.*

Leaves alternate, cordate, entire, villous; flowers on long peduncles.—*Willd. sp.* 3. *p.* 264; *Bot. mag. t.* 1056; *Mill. ic t.* 286; *Pursh, fl.* 2. *p.* 428; *Torr. compend. p.* 243; *Beck, bot. p.* 246. M. alternifolia, *Lam. enc.* 2. *p.* 112. M. annua, *Linn. sp.* 2. *p.* 618.

Stem thick, decumbent, viscidly pubescent, 1 – 2 feet long. Leaves roundish-cordate, 3 – 5 inches in diameter. Flowers large, dull yellowish white and spotted. Fruit (including the horn) 4 – 5 inches long, oblong, acuminate, tapering into a very long curved point, of a woody texture, with a coriaceous bark, at length splitting into two valves, each of which terminates in a long horn. Seeds few in each spurious cell, inserted one over the other, pendulous; the testa thick and rough.

Banks of rivers and cultivated grounds, occurring sometimes as a weed. On the Hudson above Albany, &c. Introduced from the Southwestern States. *Fl.* August – September. A fetid plant, but showy when in flower, and remarkable for its singular fruit.

ORDER LXVIII. ACANTHACEÆ. *Juss.* THE JUSTICIA TRIBE.

Calyx of 5 sepals, distinct or variously combined, persistent. Corolla mostly 2-lipped, sometimes one-lipped or somewhat equally 5-lobed; the æstivation twisted. Stamens 4 and didynamous, or often only 2, the anterior pair being abortive or wanting. Ovary 2-celled, with two or more ovules in each cell; the placentæ in the axis: style filiform: stigma 2-lobed or entire. Capsule 2-celled, bursting elastically and loculicidally, with 2 valves. Seeds roundish or compressed, each usually supported by a *retinaculum*, or subulate process of the placentæ. Albumen none.—Shrubs or herbaceous plants, with opposite simple leaves destitute of stipules. Flowers in spikes, racemes or fascicles, rarely solitary, often showy.

1. DIANTHERA. *Gronov.; Linn.* (in part); *Schreb. gen. pl.* 36 (in part). *DIANTHERA.*

[From the Greek, *dis*, double, and *anthera*, an anther; each stamen appearing to be furnished with two anthers, in consequence of a separation of the cells.]

Calyx 5-parted; the segments equal. Corolla 2-lipped, not resupinate; upper lip deeply emarginate; the lower deeply and equally 3-parted. Stamens 2 (the upper one and two lower ones wanting), inserted into the tube of the corolla: anthers two-celled; the cells semioval, smooth, placed one above the other; the upper one terminal and oblique; the lower parallel with the filament. Ovary two-celled, with two ovules in each cell: style slender: stigma minute, slightly 2-cleft. Capsule obovate, attenuated into a stipe at the base, loculicidal. Seeds 2 in each cell, each supported by a hooked retinaculum.—Herbs, with narrow entire leaves, and flowers in pedunculate heads.

1. DIANTHERA AMERICANA, *Linn.* *Water Willow.*

Leaves linear-lanceolate; spikes oblong, axillary, on elongated mostly alternate branches; flowers crowded. — *Linn. sp.* 1. *p.* 27. D. ensiformis, *Walt. fl. Car. p.* 63. Justicia Americana, *Willd. sp.* 1. *p.* 92; *Ait. Kew.* (ed. 2.) 1. *p.* 38. J. linearifolia, *Lam. ill.* 1. *p.* 41. J. pedunculosa, *Michx. fl.* 1. *p.* 7; *Pursh, fl.* 1. *p.* 13; *Torr. fl.* 1. *p.* 17; *Bot. mag. t.* 2367; *Beck, bot. p.* 285; *Darlingt. fl. Cest. p.* 591.

Root perennial, creeping. Stem 2 feet high, slender, straight, simple or a little branched above, sulcate. Leaves 3 – 6 inches long and 4 – 8 lines wide, acute, attenuated at the base into a short petiole. Peduncles 3 – 5 inches long. Spikes about an inch in length. Bracts and segments of the nearly equal calyx lanceolate-linear. Corolla pale violet-purple, about half an inch long, smooth: upper lip deeply emarginate; lower of 3 nearly equal obovate-oblong rounded lobes. Filaments as long as the tube of the corolla: anther-cells distinct;

one of them terminal, horizontal; the other lower down and vertical. Ovary surrounded by a fleshy disk at the base. Style filiform, exserted, articulated: stigma small, emarginate. Capsule obovate, compressed contrary to the dissepiment; the base attenuated into a stipe. Seeds roundish, compressed.

In water. Niagara river, Oneida lake, Oswego river, and other places in the western parts of the State. *Fl.* July. *Fr.* August.

I have not been able to refer this plant to any of the genera of ACANTHACEÆ, as they have lately been reformed by Nees; and have therefore restored and modified the old genus DIANTHERA, to which it formerly belonged, and in which it is again placed.

ORDER LXIX. SCROPHULARIACEÆ. *R. Br.* THE FIGWORT TRIBE.

Calyx of 4 or 5 more or less united sepals, persistent. Corolla personate, 2-lipped, or more or less irregular, with an imbricated æstivation. Stamens usually 4 and didynamous, rarely equal; the posterior or fifth stamen sometimes present, either as an abortive filament or perfect; sometimes only 2 (the three posterior being abortive or rudimentary). Ovary 2-celled; the placentæ in the axis. Capsule 2-valved. Seeds numerous. Embryo straight, in the axis of fleshy albumen.—Herbs, or sometimes shrubby plants. Leaves usually opposite.

CONSPECTUS OF THE TRIBES AND GENERA.

Tribe 1. VERBASCEÆ. Tube of the corolla very short or globose; the limb rotate and somewhat equally 5-lobed, or 2-lipped. Fertile stamens 2 – 5, mostly declined: anther-cells divaricate, confluent. Capsule septicidal, 2-valved. Testa solid.

1. VERBASCUM. Corolla rotate, almost equally 5-lobed.
2. SCROPHULARIA. Corolla somewhat globose; the limb contracted, with 2 short lips.

Tribe 2. ANTIRRHINEÆ. Corolla tubular; the limb personate or ringent. Stamens 4, didynamous: anthers 2-celled, approximated by pairs. Capsule opening by teeth or rarely by a lid, sometimes irregularly bursting. Testa solid or arillate.

3. LINARIA. Corolla personate; upper lip 2-cleft and reflexed, the lower 3-cleft; tube inflated, with a spur at the base. Capsule opening by 5 teeth.
4. COLLINSIA. Corolla personate, without a spur; the middle lobe of the lower lip saccate, and embracing the stamens. Capsule 1 – 2-sceded.

Tribe 3. DIGITALEÆ. Corolla tubular, 2-lipped. Stamens 4, with sometimes a fifth sterile one, declined at the base, and usually ascending above: anther-cells divaricate. Capsule septicidal; the valves 2-cleft.

5. CHELONE. Corolla ventricose, gibbous above. Fertile stamens 4, with a fifth short sterile filament. Seeds membranaceously margined.
6. PENTSTEMON. Corolla ventricose. The fifth or sterile filament longer than the fertile, and bearded on the upper side. Seeds angular.

Tribe 4. GRATIOLEÆ. Corolla nearly equal, or 2-lipped: the lobes flattish. Fertile stamens 2 or 4, ascending: anthers 2-celled. Dissepiment of the capsule bearing the placentæ, and at length free.

7. MIMULUS. Calyx prismatic, 5-toothed. Corolla ringent: upper lip reflexed at the sides; lower 3-cleft; the palate prominent.

8. GRATIOLA. Calyx 5-parted, with two bracteoles at the base. Corolla tubular, slightly 2-lipped. Fertile stamens usually only 2; the other two abortive or wanting.

9. LINDERNIA. Calyx 5-parted, without bracteoles. Corolla 2-lipped; the upper lip short and reflexed. Stamens 4; the two longer forked and sterile; the two shorter fertile.

Tribe 5. BUCHNEREÆ. Corolla 5- or unequally 4-lobed, never 2-lipped; the lobes flat. Stamens usually 4: anthers one-celled.

10. BUCHNERA. Corolla somewhat salver-form, with a long and slender tube; the limb almost equally 5-lobed; the lobes cuneate-obcordate.

Tribe 6. VERONICEÆ. Corolla rotate, funnel-form, or rarely somewhat 2-lipped. Stamens 4, or often only 2, without rudimentary sterile ones. Capsule loculicidal; the valves usually also splitting at the dissepiment.

11. LIMOSELLA. Corolla rotate-campanulate, equally 4 – 5-lobed. Stamens 4, nearly equal: anthers 1-celled. Capsule globose, 1-celled.

12. VERONICA. Calyx 4-parted. Corolla rotate. Stamens 2. Capsule obcordate.

13. PÆDEROTA. Calyx 5-parted. Corolla tubular, 4 – 5-lobed, or somewhat 2-lipped. Capsule ovoid.

Tribe 7. GERARDIEÆ. Corolla campanulate, funnel-form or tubular, somewhat spreading; the lobes flat and rounded. Stamens 4, all fertile, ascending; anther-cells distinct. Capsule 2-celled, either loculicidal or septicidal. Seeds commonly with a loose reticulate testa.

14. GERARDIA. Calyx campanulate, 5-toothed or -cleft. Corolla somewhat campanulate; the border almost equally 5-lobed. Stamens included. Capsule loculicidal. Seeds with a loose testa.

Tribe 8. RHINANTHEÆ. Corolla 2-lipped; the upper lip concave, galeate or linear. Stamens 4 (rarely 2), ascending: anther-cells distinct. Capsule loculicidal; the valves commonly entire.

15. CASTILLEJA. Calyx ventricose, spathe-like. Corolla 2-lipped; the upper lip very long and narrow. Stamens 4: anther-cells divaricate. Seeds with a loose testa.

16. PEDICULARIS. Calyx ventricose, unequally 5-toothed, or 2-lipped. Corolla ringent; the upper lip galeate, and often rostrate. Seeds with a closely adhering testa.

17. MELAMPYRUM. Calyx 4-cleft, 4-toothed, campanulate. Corolla ringent or personate; upper lip laterally compressed, with the sides reflexed; the lower with two gibbosities.

TRIBE I. *VERBASCEÆ. Benth.*

Tube of the corolla short, or somewhat globose; the limb rotate and somewhat equally 5-lobed, or 2-lipped; not ringent. Fertile stamens 2 – 5, mostly declined: anthers approximated or cohering, mostly 2- (*rarely* 1-) *celled; the cells divaricate, confluent. Capsule 2-valved, septicidal. Testa of the seed solid.*

1. VERBASCUM. *Linn.; Endl. gen.* 3878. *MULLEIN.*

[Altered from *Barbascum;* the leaves being covered with a *barba* or beard]

Calyx 5-parted, nearly equal. Corolla rotate, 5-lobed; the lobes nearly equal. Stamens 5, all perfect, declined, often hairy; the anterior ones longer. Capsule ovoid or globose, septicidal; the valves 2-cleft at the summit. — Herbs, often woolly, with alternate leaves and the flowers in spikes or paniculate racemes.

1. VERBASCUM THAPSUS, *Linn.* *Common Mullein.*

Densely woolly; stem simple; leaves ovate-oblong, decurrent; flowers in a long dense terminal spike; two of the stamens smooth.—*Linn. sp.* 1. *p.* 177; *Engl. bot. t.* 549; *Pursh, fl.* 1. *p.* 142; *Ell. sk.* 1. *p.* 274; *Bigel. fl. Bost. p.* 81; *Torr. fl.* 1. *p* 222; *Beck, bot. p.* 259; *Darlingt. fl. Cest. p.* 134.

Biennial. Whole plant of a pale green color, and clothed with soft wool. Stem 3 – 6 feet high, winged with the decurrent leaves, very straight. Leaves 6 – 12 inches long and 2 – 4 inches wide, rather acute, entire or somewhat crenate. Spike 1 – 2 feet long. Segments of the calyx lanceolate, acute. Corolla bright yellow; the segments erect-spreading. Stamens unequal; three of them shorter, with woolly filaments; the others smooth.

Fields, road-sides, etc.; very common. Introduced from Europe. The flowers, when dried in the sun, are said to yield a fatty matter which is useful in piles. *Fl.* June – October.

2. VERBASCUM BLATTARIA, *Linn.* *Moth Mullein.*

Nearly smooth; leaves clasping, oblong, crenate-serrate; flowers pedicellate, in an elongated raceme.—*Linn. sp.* 1. *p.* 178; *Engl. bot. t.* 393; *Michx. fl.* 1. *p.* 148; *Pursh, fl.* 1. *p.* 142; *Ell. sk.* 1. *p.* 274; *Bigel. fl. Bost. p.* 82; *Torr. fl.* 1. *p.* 223; *Beck, bot. p.* 259; *Darlingt. fl. Cest. p.* 134. V. Claytoni, *Michx. l. c.?*

Biennial. Stem about 2 feet high, angular, smooth. Leaves acute, coarsely and irregularly serrate or toothed; the radical ones somewhat lyrate. Raceme simple or compound; the rachis and pedicels glandularly pubescent. Pedicels about an inch long. Segments of the calyx linear-lanceolate. Corolla yellow, or white with a tinge of purple. Stamens unequal; all the filaments feathered with purple hairs.

Old fields and road-sides; common. Introduced from Europe. June – July. The yellow and white-flowered varieties often grow together, but they never pass into each other.

3. VERBASCUM LYCHNITIS, *Linn.* *White Mullein.*

Leaves oblong-wedgeshaped, nearly smooth above; stem angular, panicled; spikes rather loose. — *Linn. sp.* 1. *p.* 177; *Engl. bot. t.* 58; *Pursh, fl.* 1. *p.* 142; *Ell. sk.* 1. *p.* 274; *Torr. fl.* 1. *p.* 223; *Beck, bot. p.* 259.

Biennial. Stem 2 – 5 feet high. Leaves 3 – 6 inches long and 1 – 2½ inches wide, white and woolly underneath. Flowers cream-colored. Filaments hairy.

Old sandy fields near Oneida lake. Introduced from Europe. June – July. Intermixed with this plant there are two hybrid varieties, one of which has the stalks simple or slightly branched at the top, with yellow flowers, and leaves resembling those of *V. Thapsus;* the other has the tops much branched, whitish flowers, and leaves more like those of *V. Lychnitis.* These were first noticed by Dr. Knieskern.

2. SCROPHULARIA. *Tourn.; Wydl. mon. Scroph. in mem. soc. phys. &c. Genev.* 4. *p.* 129; *Endl. gen.* 3883. *FIGWORT*

[So named from its supposed power of healing *scrofula*.]

Calyx 5-lobed (rarely 5-cleft). Corolla nearly globose; the limb contracted, with two short lips: upper lip 2-lobed, and often with a scale or abortive stamen within; the lower 3-lobed. Capsule 2-celled, globose or ovoid, septicidal.— Herbs, or rarely suffrutescent plants, with mostly opposite leaves, and the flowers in panicles or cymes.

1. SCROPHULARIA MARILANDICA, *Linn.* *Figwort.*

Leaves ovate or lanceolate-ovate, acute, serrate, mostly rounded or cordate at the base; petioles ciliate; panicle oblong; the branches and pedicles loosely cymose-fasciculate. — *Linn. sp.* 2. *p.* 619; *Pursh, fl.* 2. *p.* 419; *Ell. sk.* 2. *p.* 106; *Bigel. fl. Bost. p.* 242; *Wydl. l. c.; Beck, bot. p.* 263; *Darlingt. fl. Cest. p.* 370. S. nodosa, *var.* Americana, *Michx. fl.* 2. *p.* 21. S. lanceolata, *Pursh, l. c.*

Root perennial. Stem 2 – 5 feet high, rather obtusely 4-angled, nearly smooth, branching above. Leaves 2 – 4 inches long, varying from ovate to nearly lanceolate, unequally and sharply serrate, slightly pubescent underneath. Panicle large and loose; the subdivisions 3 – 6-flowered. Calyx with ovate obtuse equal lobes. Corolla greenish externally, brownish purple inside; the upper lip with a small abortive scale-like stamen attached to its base within. Stamens declined, longer than the tube of the corolla; the filaments pubescent, dilated above: anthers one-celled, opening transversely at the summit. Style exserted, and curved over the reflexed lower segment of the corolla. Capsule globose-ovoid. Seeds black, rough and punctate.

Borders of woods and along fences; common. June – September. Very nearly allied to *S. nodosa* of Europe. The bruised root is employed as a poultice for reducing inflammation in tumors.

TRIBE II. *ANTIRRHINEÆ. Chavan.; Benth.*

Corolla tubular; the limb personate or ringent, rarely equal. Stamens 4, *didynamous: anthers 2-celled, approximated by pairs. Capsule 2-celled, opening by teeth or by a lid, sometimes bursting irregularly. Testa of the seed solid, or loose and arilliform.*

3. LINARIA. *Tourn.; Endl. gen.* 3891. *TOAD-FLAX.*

[From the Latin, *linum*, flax; which the leaves of some species resemble.]

Calyx 5-parted. Corolla personate; the upper lip 2-cleft and reflexed, lower 3-cleft; the throat closed by the prominent palate; the tube inflated, with a spur at its base. Stamens 4, didynamous. Capsule thin, nearly globose or ovoid, usually opening at the summit by several valves. Seeds with a dilated margin.— Herbaceous plants, with the leaves mostly alternate, rarely opposite or whorled, and the flowers axillary, solitary, or in terminal leafy racemes.

* ELATINOIDES, Chavan. *Spur of the corolla as long as the tube. Capsule with an oblique circumscribed opening, or one-valved at the apex.*

1. LINARIA ELATINE, *Desf.* *Trailing Hairy Toad-flax.*

Procumbent, hairy; leaves broadly hastate, acute, the lowest ovate, opposite; peduncles solitary, axillary, very long; spur straight, subulate. — *Ait. Kew.* (ed. 2.) 4. *p.* 20. Antirrhinum Elatine, *Linn.; Engl. bot. t.* 692; *Pursh, fl.* 2. *p.* 421; *Torr. compend. p.* 240; *Beck, bot. p.* 264.

Annual. Stem throwing out long spreading branches, very hairy. Leaves diminishing regularly in size from the base to the extremity of the branches; the lowest with a few remote teeth: petioles about an inch long. Peduncles slender; one from the axil of nearly every leaf, and diverging horizontally from the stem. Flowers twice as large as in *L. Canadense*. Calyx-segments lanceolate. Corolla yellowish, with the upper lip purple: spur extended. Capsule depressed; the cells 5 – 6-seeded.

Sandy fields; near Albany (*Dr. Beck*), and shore of Cayuga lake (*Dr. Gray*). Probably introduced from Europe. *Fl.* July.

** LINARIASTRUM, Chavan. *Spur of the corolla about as long as the tube. Capsule opening at the summit by* 4 – 10 *teeth or valves.*

2. LINARIA VULGARIS, *Mœnch.* *Common Toad-flax*, or *Ransted.*

Erect; leaves linear, verticillate and scattered; flowers imbricated in a terminal spiked raceme; calyx smooth, shorter than the spur of the corolla. — *Ait. Kew.* (ed. 2.) 4. *p.* 17; *Darlingt. fl. Cest. p.* 368. Antirrhinum Linaria, *Linn. sp.* 2. *p.* 618; *Engl. bot. t.* 658; *Pursh, fl.* 2. *p.* 421; *Bigel. fl. Bost. p.* 243; *Torr. compend. p.* 240; *Beck, bot. p.* 264.

Whole plant of a glaucous hue and smooth. Root perennial. Stem 1 – 2 feet high, sometimes a little branched, but usually simple. Leaves numerous, 1 – 2 inches long and 1 – 2 lines wide, acute. Flowers large and rather showy, in a dense raceme. Calyx-segments oblong, acute. Corolla pale pellow; the palate tinged with orange. Spur subulate. Capsule ovoid-oblong. Seeds conspicuously margined.

Road-sides, fields, etc.; very common. June – October. A pernicious weed, doubtless of European origin, and now spread over the northern and middle regions of the United States. It is sometimes called *Snapdragon*, and *Continental-weed*. I have found at West-Point a variety with 3 spurs. Another form, called *Peloria*, with 5 spurs, 5 stamens and a regular corolla, has been occasionally seen, but is very rare.

3. LINARIA CANADENSIS, *Spreng.* *Canadian Toad-flax.*

Stem erect or assurgent, mostly simple; leaves linear, scattered, obtuse; flowers racemose; scions procumbent. — *Spreng. syst.* 2. *p.* . . .; *Bot. mag. t.* 3473; *Hook. fl. Bor.-Am.* 2. *p.* 94. Antirrhinum Canadense, *Linn. sp.* 1. *p.* 618; *Vent. hort. Cels. t.* 49; *Walt. fl. Car. p.* 169; *Michx. fl.* 2. *p.* 20; *Pursh, fl.* 2. *p.* 421; *Ell. sk.* 2. *p.* 113; *Bigel. fl. Bost. p.* 243; *Beck, bot. p.* 264.

Annual or biennial. Stem a foot high, very slender, smooth, often throwing out from its base a number of prostrate scions or abortive branches two or three inches in length. Leaves about three-fourths of an inch long and one line wide; the lowest somewhat spatulate. Flowers in a naked raceme, rather distant, on pedicels about 2 lines long, which are furnished with a short subulate bract at the base. Calyx-segments lanceolate. Corolla small, pale blue; the spur descending, straight and very slender. Capsule roundish-ovoid, as long as the calyx, opening by five teeth. Seeds numerous, blackish, quadrangular and somewhat wedge-shaped.

Fields and meadows; most commonly in sandy soils, either wet or dry: not rare. *Fl.* May – August.

4. COLLINSIA. *Nutt. in jour. acad. Philad.* 1. *p.* 190. *t.* 9; *Endl. gen.* 3897.

COLLINSIA.

[In honor of the late ZACCHEUS COLLINS of Philadelphia, an accurate botanist, and promoter of natural science.]

Calyx 5-cleft. Corolla personate: upper lip 2-cleft; the lower 3-cleft; the middle lobe saccate-carinate, and surrounding the stamens. Capsule globose, membranaceous; the dissepiment early breaking away from the valves. Seeds usually 2 (sometimes by abortion only one) in each cell, obliquely superimposed, umbilicate. — Annual herbs, with opposite or ternate leaves, and axillary one-flowered opposite or verticillate peduncles. Flowers ornamental.

1. COLLINSIA VERNA, *Nutt.* *Early Particolored Collinsia.*

Assurgent, nearly smooth; leaves remotely and rather obtusely serrate; the radical oblong or cordate and petiolate; cauline opposite, ovate-oblong, sessile or clasping, the uppermost ternate. — *Nutt. l. c.; Torr. compend. p.* 241; *Sweet, Brit. fl. gard. t.* 220; *Beck, bot. p.* 267.

Stem 6 – 12 inches high, slightly pubescent, at length branching. Leaves about an inch long, mostly obtuse; the lower and radical ones on petioles which are half an inch or more in length. Pedicels pubescent, about an inch long. Calyx-segments lanceolate, acute, minute. Corolla particolored: the upper lip erect, deeply 2-cleft; the lobes broadly obovate, yellowish white: lower lip 3-cleft; the middle lobe saccate or cucullate, and keeled on the underside, enclosing the declinate stamens; lateral lobes blue. Stamens didynamous, approximated: filaments slightly pubescent: anthers cordate-reniform; the cells opening along the margin, at length confluent. Abortive stamen in the form of a short spur at the base of the corolla. Ovary ovoid, 2-celled; the dissepiment placentiferous. Ovules 2 in each cell, one obliquely above the other: style almost capillary, included: stigma minute, 2-cleft. Capsule 2-valved; the valves 2-cleft, early separating from the dissepiment. Seeds oblong, obtuse at each end, concave on the face. Embryo straight, in the axis of firm albumen: cotyledons flat and foliaceous.

In rich alluvial soil. Near Utica (*Dr. Gray*); Ithaca (*Dr. Aikin*). May. An ornamental plant, not uncommon in gardens. Several other species occur west of the Mississippi.

TRIBE III. *DIGITALEÆ. Benth.*

Corolla tubular, mostly ventricose, 2-lipped. Stamens 4 fertile and often a fifth sterile one, declined at the base, and mostly ascending at the extremity : anthers 2-celled ; the lobes finally divaricate and confluent. Capsule hard, 2-valved, septicidal ; the valves 2-cleft or 2-parted.

5. CHELONE. *Linn. ; Endl. gen.* 2908. *SHELL-FLOWER.*

[From the Greek, *chelone*, a tortoise; the flowers somewhat resembling the head of that animal.]

Calyx 5-parted. Corolla ringent, ventricose and gibbous on the upper part : upper lip 2-lobed or entire, broad and concave ; lower 3-lobed, bearded internally. Stamens 4, didynamous, with a fifth shorter sterile filament : anthers woolly. Capsule 2-celled, septicidal ; the placentæ adnate to the dissepiment. Seeds numerous, with a membranaceous margin. — Perennial herbs, with opposite serrated leaves, and large flowers in thick terminal spikes.

1. CHELONE GLABRA, *Linn.* *Shell-flower. Snake-head.*

Leaves lanceolate or oblong-lanceolate, nearly sessile, smooth. — *Linn. sp.* 2. *p.* 611 ; *Michx. fl.* 2. *p.* 24 ; *Pursh, fl.* 2. *p.* 427 ; *Nutt. gen.* 2. *p.* 51 ; *Ell. sk.* 2. *p.* 126 ; *Bigel. fl. Bost. p.* 248 ; *Bart. fl. N. Am. t.* 76 (poor) ; *Beck, bot. p.* 266 ; *Darlingt. fl. Cest. p.* 369 ; *Hook. fl. Bor.-Am.* 2. *p.* 94.

Root creeping. Stem 2 – 3 feet high, obtusely quadrangular, erect, nearly simple. Leaves 2 – 4 inches long, of a firm texture, sharply serrate, somewhat rugous. Spikes terminal and axillary in the upper part of the stem, very thick and compact, but few-flowered. Bracts and bracteoles broad and concave, acuminate. Calyx 5-parted to the base ; the segments roundish, concave and obtuse. Corolla more than an inch in length, white or pale purple ; the upper lip obtuse, entire ; lobes of the lower lip of nearly equal length, but the middle one narrowest. Stamens included : filaments flattened, pubescent : anthers connected by a copious wool : rudimentary filament one-third the length of the others, smooth. Style filiform : stigma small, obtuse. Capsule ovoid, with 2 opposite grooves. Seeds numerous, conspicuously margined.

Margin of swamps ; common. August – September. Used by the Thomsonian doctors as a tonic, etc., under the name of *Balmony*. *C. obliqua* of authors seems to be scarcely a distinct species from this.

6. PENTSTEMON. *L'Herit.; Schreb. gen. pl.* 1758; *Endl. gen.* 3909. *PENTSTEMON.*

[From the Greek, *pente*, five, and *stemon*, a stamen; the fifth or abortive stamen being large.]

Calyx deeply 5-parted, or of 5 sepals. Corolla 2-lipped, ventricose. The fifth or sterile filament longer than the fertile, and bearded on the upper side. Anthers smooth. Capsule 2-celled, 2-valved. Seeds angular. — Perennial or rarely suffruticose herbs, with opposite leaves and paniculate (mostly purplish) flowers.

1. PENTSTEMON PUBESCENS, *Willd.* *Pubescent Pentstemon.*

Stem pubescent; leaves lanceolate-oblong, repandly serrulate or serrate, sessile and clasping; sterile filament bearded from the summit to below the middle.—*Willd. sp.* 3. *p.* 227; *Michx. fl.* 2. *p.* 21; *Pursh, fl.* 2. *p.* 428; *Nutt. gen.* 2. *p.* 52; *Ell. sk.* 2. *p.* 129; *Bart. fl. N. Am. t.* 103; *Beck, bot. p.* 266; *Darlingt. fl. Cest. p.* 369; *Hook. fl. Bor.-Am.* 2. *p.* 97.

Stem 12 – 15 inches high, obtusely quadrangular, simple or branching from the base. Leaves nearly smooth, 2 – 5 inches long and 4 – 6 lines wide: radical ones longer and attenuated at the base, often nearly entire; those of the stem sessile, the uppermost broader. Flowers in a loose trichotomous panicle. Sepals ovate-lanceolate, acuminate, pubescent. Corolla about an inch long, pubescent, tapering below: upper lip 2-lobed, compressed; lower 3-cleft, plaited, hairy inside. Stamens smooth: anther-lobes divaricate: sterile filament without an anther, beautifully plumose. Style about the length of the stamens: stigma small. Capsule ovoid, smooth.

Hills and borders of woods; north and west of Catskill. June – July.

TRIBE IV. *GRATIOLEÆ. Benth.*

Corolla nearly equal, or 2-lipped; the lobes flattish. Fertile stamens 2 or 4: anthers 2-celled, pointless. Capsule 2-celled; the dissepiment placentiferous, at length free. Seeds wingless.

7. MIMULUS. *Linn.; Endl. gen.* 3935. *MONKEY-FLOWER.*

[So named from the Greek, *mimo*, a monkey; in allusion to its grinning flowers.]

Calyx tubular, prismatic, 5-toothed. Corolla ringent; the upper lip reflexed at the sides: lower lip 3-cleft, with the palate prominent. Stigma thick, 2-cleft. Capsule 2-celled, many-seeded. Seeds minute.— Perennial or annual herbaceous plants, with quadrangular stems and opposite leaves. Flowers axillary and solitary, without bracts, mostly violet or yellow.

1. MIMULUS RINGENS, *Linn.* *Common Monkey-flower.*

Erect, smooth; leaves sessile, lanceolate, acuminate, serrate; peduncles longer than the flower; segments of the calyx lanceolate-ovate, acuminate. — *Linn. sp.* 2. *p.* 634; *Walt. fl. Car. p.* 172; *Michx. fl.* 2. *p.* 23; *Bot. mag. t.* 283; *Pursh, fl.* 2. *p.* 426; *Ell. sk.* 2. *p.* 125; *Bigel. fl. Bost. p.* 248; *Beck, bot. p.* 264; *Darlingt. fl. Cest. p.* 367.

Perennial. Stem about two feet high, somewhat branching, 4-angled but not winged. Leaves 2 – 4 inches long, closely sessile and a little clasping; the nerves prominent. Flowers axillary in the upper part of the stem. Calyx strongly prismatic; the teeth about one-fourth the length of the tube. Corolla three-fourths of an inch in length, pale violet-purple; the tube rather longer than the calyx: lower lip larger than the upper. Stamens included; the anthers with divaricate lobes. Style filiform, included: stigma obtuse. Capsule oblong-ovoid, membranaceous. Seeds very numerous, ovoid.

Wet meadows and margins of streams; common. *Fl.* July – August.

2. MIMULUS ALATUS, *Ait.* *Wing-stemmed Monkey-flower.*

Erect, smooth; stem with winged angles; leaves petiolate, ovate, acuminate, dentate-serrate; peduncles shorter than the flowers; teeth of the calyx very short and broad, mucronate.— *Ait. Kew.* (ed. 1.) 2. *p.* 361; *Pursh, fl.* 2. *p.* 426; *Ell. sk.* 2. *p.* 125; *Bart. fl. N. Am. t.* 94; *Bot. cab. t.* 410; *Beck, bot. p.* 264; *Darlingt. fl. Cest. p.* 368.

Perennial. Stem about two feet high, often somewhat branching, slightly winged on the angles. Leaves 3 – 4 inches long and 1 – 2 inches wide, rather toothed than serrated, tapering at the base into a petiole which is nearly one-third the length of the lamina. Flowers axillary in the upper part of the stem, and also somewhat paniculate at the summit. Peduncles 2 – 3 lines long. Calyx appearing as if truncate, tapering to the base. Corolla and capsule nearly as in the preceding species.

Wet meadows; rarer than *M. ringens.* July – August.

8. GRATIOLA. *Linn.; R. Br. prodr.* 1. *p.* 435; *Endl. gen.* 3946. *HEDGE HYSSOP.*

[From the Latin, *gratia,* grace or favor; in allusion to its supposed medicinal virtues]

Calyx 5-parted, with 2 bracteoles at the base. Corolla tubular, somewhat 2-lipped: upper lip 2-lobed or emarginate; the lower almost equally 3-lobed. Stamens 4, of which 2 (the upper or posterior) are fertile, and usually the other 2 abortive. Stigma obliquely bilamellate. Capsule 2-celled, 2-valved; the valves at length 2-cleft. Seeds numerous. — Herbaceous plants, with opposite leaves and axillary one-flowered peduncles.

1. GRATIOLA VIRGINICA, *Linn.* *Common Hedge Hyssop.*

Stem assurgent, terete, pubescent above; leaves oblong-lanceolate, sessile, smooth, sparingly dentate-serrate, narrowed and connate at the base; segments of the calyx linear-lanceolate, equal; sterile filaments almost wanting. — *Linn. sp.* 1. *p.* 17; *Walt. fl. Car. p.* 62; *Pursh, fl.* 1. *p.* 12; *Ell. sk.* 1. *p.* 12; *Torr. fl.* 1. *p.* 13; *Le Conte in ann. lyc. N. York,* 1. *p.* 106; *Beck, bot. p.* 265; *Darlingt. fl. Cest. p.* 363. G. neglecta, *Torr. cat. pl. N. York, p.* 89. G. viscosa, *Le Conte, l. c.*

Root annual? Stem 4 – 8 inches high, branching from near the base, often smooth below. Leaves about an inch long, rather obtuse or acute. Bracteoles at first about the length of the calyx, finally longer. Tube of the corolla curved, dull yellow; the throat hairy; the limb cream-colored, or sometimes tinged with purple: upper lip broad and obscurely 2-lobed: segments of the lower lip all emarginate. Fertile stamens inserted about the middle of the tube of the corolla, included: sterile filaments very minute, at the base of the tube. Capsule roundish-ovoid, about as long as the calyx. Seeds numerous, minute, rough and striate.

Low muddy places; common. July. In my Flora of the Northern States, the flowers of this plant are described as destitute of sterile filaments. This is a mistake; for although very minute, I now find them to be constantly present. The pubescence of the stem is variable; being sometimes almost wanting, and again very copious and viscid. *G. viscosa* of Schweinitz does not appear to be distinct from this species.

2. GRATIOLA AUREA, *Muhl.* *Golden Hedge Hyssop.*

Smooth; stem assurgent, obtusely 4-angled, creeping at the base; leaves linear-oblong, partly clasping, obscurely toothed or entire, dotted; segments of the calyx linear-lanceolate, equal, longer than the bracteoles; sterile filaments minute. — *Muhl. cat. p.* 2; *Pursh, fl.* 1. *p.* 12; *Ell. sk.* 1. *p.* 13; *Bigel. fl. Bost. p.* 6; *Torr. fl.* 1. *p.* 12; *Le Conte, l. c.; Beck, bot. p.* 264. G. officinalis, *Michx. fl.* 1. *p.* 6.

Root perennial, creeping. Stem 4 – 8 inches high, branching. Leaves half an inch long, acute or rather obtuse, marked with minute pellucid dots. Peduncles often longer than the leaves, slender, pubescent, usually alternate. Bracts about one-third shorter than the calyx. Corolla golden yellow: upper lip emarginate; lower equally three-lobed; the middle lobe emarginate. Capsule ovoid. Seeds minute, rough.

Wet grounds, particularly in sandy swamps. Long Island. July – August.

9. LINDERNIA. *Allioni, fl. Pedem.* 3. *p.* 178 ; *Endl. gen.* 3958. *LINDERNIA.*

[Named in honor of F. B. VON LINDERN, a German botanist.]

Calyx deeply 5-parted, without bracteoles. Corolla 2-lipped : upper lip short, reflexed ; lower 3-lobed , the middle lobe larger and emarginate : tube ventricose. Stamens 4 ; the two longer, forked and sterile ; the two shorter, fertile. Ovary 2-celled ; the dissepiment placentiferous, early separating from the walls of the ovary : stigma 2-lobed. Capsule ovoid-oblong, membranaceous, 1-celled, 2-valved ; the valves entire, not inflexed : dissepiment thin and plane. Seeds very numerous, oblong, rough, attached to the free ancipital-fusiform placenta. — Annual smooth herbs, with opposite ovate serrate or toothed leaves, and axillary one-flowered peduncles. Flowers blue.

1. LINDERNIA DILATATA, *Muhl.* *Long-stalked Lindernia.*

Leaves ovate or oblong, dilated at the base, clasping, remotely toothed ; peduncles longer than the leaves. — *Ell. sk.* 1. *p.* 16 ; *Muhl. cat. p.* 61 ; *Bart. fl. N. Am.* 1. *p.* 109. *t.* 31 ; *Torr. fl.* 1. *p.* 14. L. Pyxidaria, *Pursh, fl.* 2. *p.* 419 ; *Bigel. fl. Bost. p.* 7. Gratiola anagallidea, *Michx. fl.* 1. *p.* 6 (in part). G. inequalis, *Walt. fl. Car. p.* 61.

Stem erect or assurgent, 4 – 8 inches high, slender, branching (often much so), quadrangular. Leaves 6 – 8 lines long, 3 – 5-nerved. Peduncles at first about as long, or only a little longer than the leaves ; finally elongated, filiform, spreading horizontally when old. Segments of the calyx nearly equal, ciliolate. Corolla pale purplish blue : upper lip broad, entire, only a little emarginate : segments of the lower lip oval, obtuse. The two upper stamens as long as the corolla ; filaments forked and sterile : the two lower (anterior) fertile ; anthers 2-lobed. Ovary oblong, acute, 2-celled ; the dissepiment placentiferous nearly its whole length : ovules numerous : style as long as the fertile stamens. Capsule a little longer than the calyx, becoming imperfectly one-celled soon after the fertilization of the ovules, in consequence of the placenta separating from the walls of the ovary.

Low moist grounds, and borders of rivulets ; frequent. July – August.

2. LINDERNIA ATTENUATA, *Muhl.* *Short-stalked Lindernia.*

Leaves oblong-lanceolate and obovate, narrowed at the base, serrate denticulate ; peduncles shorter than the leaves.—*Ell. sk.* 1. *p.* 17 ; *Muhl. cat. p.* 61 ; *Torr. fl.* 1. *p.* 14 ; *Darlingt. fl. Cest. p.* 364. L. Pyxidaria, *var.* major, *Pursh, fl.* 2. *p.* 419. Gratiola anagallidea, *Michx. fl.* 1. *p.* 6 (in part).

Stem 4-angled, erect or assurgent, branching, stouter than in the preceding species. Leaves half an inch to an inch in length ; the lower ones sometims spatulate. Peduncles at first shorter than the leaves, but finally equalling them. Flowers and capsule as in *L. dilatata.*

With the preceding, and more common than that species. July – September. These two species are by some botanists united into one. They are certainly very nearly related, but I have not seen them passing into each other.

TRIBE V. *BUCHNEREÆ. Benth.*

Calyx 5-cleft or 5-toothed. Corolla 5- or unequally 4-cleft (never 2-lipped); the lobes all flat. Stamens 4, ascending: anthers one-celled. Stigma small, somewhat capitate. Capsule 2-valved; the valves entire or 2-cleft.

10. BUCHNERA. *Linn.; Endl. gen.* 3960; *Benth. syn. Buch. in Hook. comp. bot. mag.* 1. *p.* 365. **BUCHNERA.**

[In honor of JOHN GOTTFRIED BUCHNER, a German botanist.]

Calyx tubular, 5-toothed. Corolla somewhat salver-form, with a long and slender tube; the limb flat, almost equally 5-lobed; the lobes cuneate-obcordate. Stamens didynamous, all perfect, included: anthers 1-celled. Capsule ovoid, 2-celled, loculicidal, opening elastically; the valves entire. Seeds rather numerous, angular. — Perennial herbs, turning black in drying. Leaves opposite, mostly rough. Flowers opposite, in a terminal spike.

1. BUCHNERA AMERICANA, *Linn.* *Blue Hearts.*

Hairy-hispid; stem simple; leaves lanceolate, somewhat toothed, sessile, rough; spike finally elongated, with the flowers rather distant; tube of the corolla twice as long as the calyx. — *Linn. sp.* 2. *p.* 630; *Walt. fl. Car. p.* 169; *Michx. fl.* 2. *p.* 18; *Pursh, fl.* 2. *p.* 421; *Ell. sk.* 2. *p.* 112; *Torr. compend. p.* 240; *Beck, bot. p.* 263; *Benth. l. c.; Darlingt. fl. Cest. p.* 371.

Whole plant clothed with short rough hairs, turning grayish black in drying. Stem 1 – 2 feet high, straight; the upper part nearly naked. Leaves 3-nerved; the lowest often ovate- or oblong-lanceolate; the cauline diminishing in breadth upward, remotely and often obscurely toothed. Flowers at first approximated, but finally remote. Bracts much shorter than the calyx, ovate. Calyx-tube oblong-tubular, slightly curved; the teeth short and acuminate. Corolla purple; the tube about twice as long as the calyx: border half an inch in diameter; the two upper lobes shortest. Stamens much shorter than the tube of the corolla: anthers oblong, acute. Style included: stigma obtuse. Capsule ovoid-oblong, coriaceous, enclosed in the enlarged ventricose calyx; the placenta extending into the cavity of the cells. Seeds minute, black.

Moist meadows. Gorham, Ontario county (*Dr. Gray*); on the Genesee river, north of Rochester (*Dr. Bradley*). *Fl.* August. *Fr.* October.

TRIBE VI. *VERONICEÆ. Benth.*

Corolla rotate, funnel-form, rarely tubular or somewhat 2-lipped. Stamens 4, *all of them fertile; or often only* 2, *without abortive rudiments. Capsule 2-celled, loculicidal; the valves often 2-cleft at the dissepiment.*

11. LIMOSELLA. *Linn.; Endl. gen.* 3977. *MUDWORT.*

[Named from the Latin, *limus*, mud; the plant growing in muddy places.]

Calyx 5-cleft, equal. Corolla 4 – 5-lobed, somewhat campanulate; the lobes equal. Stamens 4, nearly equal: anthers distant, 1-celled. Stigma capitate. Capsule globose, 1-celled, 2-valved; the valves entire. Seeds several, oblong, longitudinally sulcate and transversely striate.—Small annual herbs, with creeping filiform stems, which throw up tufts of narrow leaves and one-flowered peduncles. Flowers minute, blue or white.

1. LIMOSELLA AQUATICA, *var.* TENUIFOLIA, *Hoff.* *Common Mudwort.*

Leaves linear, very narrow.—*Hoff. fl. Germ.* 2. *p.* 29; *Pers. syn.* 2. *p.* 167. L. subulata, *Ives in trans. phys. med. soc. N. York*, 1. *p.* 439, *with a figure; Torr. compend. p.* 239; *Beck, bot. p.* 267. L. tenuifolia, *Nutt. in jour. acad. Philad.* 1. *p.* 115, *and gen.* 2. *p.* 43.

Plant rooting and creeping in the mud. Leaves about an inch long and half a line wide, scarcely dilated at the extremity, somewhat succulent. Peduncles usually longer than the leaves. Flowers minute. Calyx campanulate; the teeth acute. Corolla pale blue externally, white inside, often 4-lobed.

Muddy banks of the Hudson. Near West-Point (*Prof. Bailey*); Peekskill (*Dr. Mead*). July – September.

12. VERONICA. *Linn.; Endl. gen.* 3979. *SPEEDWELL.*

[Origin of the name uncertain.]

Calyx 4-parted. Corolla rotate, unequally 4-lobed; the lower segment narrower. Stamens 2: anthers 2-celled. Capsule 2-celled, obcordate. Seeds usually few, plano-convex, or roundish and hollowed on one side. — Herbs or suffruticose plants, with opposite or verticillate (rarely alternate) leaves, which are often serrate or incised. Flowers axillary, spiked or racemose, mostly blue or white.

* VERONICA proper. *Calyx* 4- (*rarely* 5-) *parted. Corolla rotate. Seeds plano-convex.*

1. VERONICA SERPYLLIFOLIA, *Linn.* *Paul's Betony.*

Stem ascending; leaves ovate or elliptical, crenate, smooth; raceme elongated, many-flowered; capsule inversely reniform, as long as the style. — *Linn. sp.* 1. *p.* 12; *Walt. fl. Car. p.* 60; *Mich. fl.* 1. *p.* 4; *Engl. bot. t.* 1075; *Pursh, fl.* 1. *p.* 11; *Bigel. fl. Bost. p.* 5; *Torr. fl.* 1. *p.* 8; *Beck, bot. p.* 261; *Darlingt. fl. Cest. p.* 3.

Perennial. Stems 3 – 8 inches long, rooting at the base. Leaves 4 – 6 lines long; the lower ones on short petioles, rather fleshy. Raceme erect; the flowers on short pedicels, sometimes opposite. Bracts elliptical. Corolla pale blue, or sometimes nearly white. Capsule broader than long, much compressed, ciliate on the margin. Seeds 15 – 20, ovate, light brown, flattened on one side.

Pastures, meadows, road-sides, etc.; very common. Introduced from Europe, and now completely naturalized throughout the United States. May – August.

2. VERONICA OFFICINALIS, *Linn.* *Common Speedwell.*

Stems procumbent, rooting at the base, pubescent; leaves broadly ovate and obovate, serrate, roughly pubescent; racemes spiked, axillary, pedunculate. — *Linn. sp.* 1. *p.* 12; *Engl. bot. t.* 765; *Michx. fl.* 1. *p.* 5; *Pursh, fl.* 1. *p.* 10; *Torr. fl.* 1. *p.* 8; *Bigel. fl. Bost. p.* 5; *Beck, bot. p.* 262; *Darlingt. fl. Cest. p.* 4.

Perennial. Stems diffuse, 6 – 10 inches long; the branches ascending. Leaves opposite, on short petioles, pale green. Spikes on long peduncles, which mostly arise from the lower part of the stem. Corolla pale blue, with darker veins. Capsule pubescent. Seeds 8 – 10, nearly round, flat on one side, yellowish.

Dry woods and pastures; not common. Introduced from Europe? May – July. This and some other species were formerly employed medicinally as tonics, and have also been used as a substitute for tea.

3. VERONICA BECCABUNGA, *Linn.* *Brooklime.*

Stems procumbent and rooting at the base; leaves elliptical, obtuse, somewhat serrate, smooth; racemes opposite. — *Linn. sp.* 1. *p.* 12; *Engl. bot. t.* 655.

var. *Americana:* leaves ovate-lanceolate, all on short petioles, rather acute. V. Beccabunga, *Pursh, fl.* 1. *p.* 11; *Torr. fl.* 1. *p.* 9; *Bigel. fl. Bost. p.* 5; *Beck, bot. p.* 262; *Darlingt. fl. Cest. p.* 4. V. intermedia, *Schwein. in Sill. journ.* 8. *p.* 268.

Whole plant smooth, rather succulent. Stem 8 – 15 inches high, rooting at the lower joints. Leaves 1 – 2½ inches long and half an inch to an inch or more in breadth, sometimes slightly cordate, but usually abruptly narrowed to a short petiole, never clasping; the lowest obtuse. Racemes axillary, slender, many-flowered; the bracts lanceolate, shorter than the finally diverging pedicels. Calyx-lobes oblong, acute. Corolla bright blue. Capsule roundish-obcordate, compressed. Seeds numerous, ovoid, compressed.

Muddy borders of small streams, and about springs; frequent. July. This plant differs in several respects from the European *V. Beccabunga*, and Mr. Schweinitz was perhaps correct in regarding it as a distinct species. It is nearly allied to the following, and is doubtless often confounded with it by our botanists.

4. VERONICA ANAGALLIS, *Linn.* *Water Speedwell.*

Stem erect; leaves lanceolate, clasping, serrate; the upper closely sessile and clasping, lowest on short petioles; racemes opposite.—*Linn. sp.* 1. *p.* 12; *Michx. fl.* 1. *p.* 5; *Engl. bot. t.* 721; *Pursh, fl.* 1. *p.* 11; *Ell. sk.* 1. *p.* 9; *Torr. fl.* 1. *p.* 9; *Bigel. fl. Bost. p.* 5; *Beck, bot. p.* 261; *Darlingt. fl. Cest. p.* 4.

Perennial. Stem somewhat succulent, a foot or more high. Leaves 1 – 2½ inches long, tapering gradually from a broad base to a sharp point, very smooth. Racemes mostly opposite, elongated, many-flowered. Pedicels as long as the flower, never reflexed. Segments of the calyx acute. Corolla pale blue, with purple veins. Capsule deeply emarginate, tumid. Seeds rather numerous, ovoid, compressed.

Muddy borders of streams and ponds; common. June – August. This species is a native also of Europe. It is best distinguished from the preceding by its narrower, more acute, sessile and clasping leaves.

5. VERONICA SCUTELLATA, *Linn.* *Marsh* or *Scullcap Speedwell.*

Stem nearly erect, slender; leaves linear or lanceolate-linear, sessile, denticulate; racemes lateral, alternate; pedicels divaricate. — *Linn. sp.* 1. *p.* 12; *Michx. fl.* 1. *p.* 5; *Engl. bot. t.* 726; *Pursh, fl.* 1. *p.* 11; *Bigel. fl. Bost. p.* 5; *Torr. fl.* 1. *p.* 9; *Beck, bot. p.* 261; *Darlingt. fl. Cest. p.* 5.

Root perennial, creeping. Stem weak, often branched and diffuse, about a foot long, smooth. Leaves opposite, 1 – 3 inches long and usually 2 – 3 lines wide, but sometimes almost lanceolate, remote and minutely denticulate, rarely almost entire, somewhat fleshy. Racemes filiform, many-flowered, spreading or pendulous; the slender pedicels divaricate after flowering. Calyx-segments lanceolate. Corolla pale blue or flesh-colored. Capsule reniform-obcordate, much compressed. Seeds about seven in each cell.

Wet places; frequent. May – June. A common European species, and doubtless indigenous here.

6. VERONICA PEREGRINA, *Linn.* *Neck-weed.*

Smooth; stem erect; leaves oblong, rather obtuse, dentate-serrate; flowers solitary, axillary, sessile. — *Linn. sp.* 1. *p.* 14; *Fl. Dan. t.* 407; *Michx. fl.* 1. *p.* 4; *Pursh, fl.* 1. *p.* 11; *Ell. sk.* 1. *p.* 10; *Torr. fl.* 1. *p.* 10; *Beck, bot. p.* 262; *Darlingt. fl. Cest. p.* 5; *Hook. fl. Bor.-Am.* 2. *p.* 101. V. Marilandica, *Murr. comm. Gœtt.* 1782. *t.* 3 (excl. syn.). V. Caroliniana, *Walt. fl. Car. p.* 61. V. carnulosa, *Lam. enc.* 1. *p.* 47. V. Romana, *Linn. f. supp.* V. Xalapensis, Chilensis *and* Peruviana, *H. B. & K.* fide *Cham. & Schlecht.*

Annual. Stems simple or branching from the base, 4 – 8 inches high. Leaves rather fleshy; radical ones narrowed at the base into a short petiole; upper ones sessile and much narrower. Segments of the calyx linear-lanceolate. Corolla very small, white. Capsule obcordate. Seeds 20 or more in each cell.

Moist grounds and cultivated fields; very common. Introduced from Europe. May – June. Formerly considered a valuable remedy for scrophulous affections, but probably of little value. (See *Bart. med. & phys. jour.* 3. *p.* 24.)

7. VERONICA ARVENSIS, *Linn.* *Corn Speedwell.*

Stems assurgent, hairy; leaves cordate-ovate, crenate-serrate, the lower ones petiolate; the upper bract-like, lanceolate, sessile, alternate; flowers axillary and solitary, nearly sessile. — *Linn. sp.* 1. *p.* 13; *Walt. fl. Car. p.* 61; *Michx. fl.* 1. *p.* 4; *Pursh, fl.* 1. *p.* 11; *Ell. sk.* 1 *p.* 9; *Torr. fl.* 1. *p.* 10; *Bigel. fl. Bost. p.* 6; *Barr. in Engl. bot. suppl. t.* 2603; *Beck, bot. p.* 262; *Darlingt. fl. Cest. p.* 5.

Annual. Stems often branching from the root. Leaves pubescent, 4 – 6 lines long. Flowers axillary, or rather in a leafy raceme. Corolla pale blue, shorter than the unequal calyx, pale purple. Capsule much compressed, obcordate, ciliate on the margin. Seeds 6 – 8 in each cell, oval, plano-convex.

Dry fields and hill-sides; rather common. Introduced from Europe. *Fl.* April – August.

** COCHLIDIOSPERMUM, Reich. *Calyx* 4- (*rarely* 5-) *parted. Corolla rotate. Seeds with a deep pit on one side.*

8. VERONICA AGRESTIS, *Linn.* *Procumbent Field Speedwell.*

Stem procumbent, hairy; leaves all petiolate, cordate-ovate, incisely serrate, as long as the pedicels; flowers axillary, solitary, pedicellate; segments of the calyx equal. — *Linn. sp.* 1. *p.* 13; *Engl. bot. t.* 783; *Muhl. cat. p.* 2; *Ell. sk.* 1. *p.* 9; *Torr. fl.* 1. *p.* 10; *Bigel. fl. Bost. p.* 6; *Beck, bot. p.* 262.

Annual. Stems 3 – 4 inches long, slightly hairy, slender. Leaves alternate, roundish-ovate, shorter than the petioles. Peduncles about the length of the leaves, recurved after the fruit is formed. Segments of the calyx 3-nerved, ciliate. Corolla pale blue with deep blue veins, sometimes nearly white. Lobes of the capsule roundish and tumid. Seeds about 8 in each cell, each with a deep pit on one side.

Dry sandy fields; rare. Introduced from Europe. May.

9. VERONICA HEDERIFOLIA, *Linn.* *Ivy-leaved Speedwell.*

Stems procumbent, diffuse, pubescent; leaves all petiolate, cordate, 5 – 7-lobed, the upper ones 3-lobed; flowers axillary, solitary; segments of the calyx cordate, ciliate, acute. — *Linn. sp.* 1. *p.* 13; *Engl bot. t.* 784; *Muhl. cat. p.* 2; *Torr. fl.* 1. *p.* 10; *Beck, bot. p.* 262; *Darlingt. fl. Cest. p.* 5.

Annual. Stems slender, 4 – 10 inches long; the pubescence somewhat in lines. Leaves almost reniform-cordate, a little fleshy; the primordial ones persistent, on long petioles. Pedicels longer than the leaves, slender. Calyx finally somewhat 4-sided, longer than the fruit; the segments converging. Corolla blue, smaller than the calyx. Lobes of the capsule very turgid, black, wrinkled. Seeds 2 in each cell, large and cupped.

Hill-sides, near Brooklyn, Long Island. Introduced. *Fl.* Latter part of March – April.

13. PÆDEROTA. *Linn.; Endl. gen.* 3980. *PÆDEROTA.*

LEPTANDRA, *Nutt.;* CALLISTACHYA, *Raf.*

[An ancient name of a species of *Acanthus*, applied by Linnæus to this genus.]

Calyx 5-parted. Corolla tubular; the limb unequally 4 – 5-lobed, or somewhat 2-lipped. Stamens 2, inserted into the upper part of the corolla, exserted: anthers 2-celled. Capsule ovoid, acute, 2-celled, loculicidal; the valves at length 2-cleft. Seeds numerous, obovoid or terete. — Leaves opposite or verticillate, serrate. Flowers in terminal spikes.

1. PÆDEROTA VIRGINICA. *Culver's Physic.*

Stem erect; leaves verticillate, mostly in fours and fives, lanceolate; spikes aggregated; flowers unequally 4-lobed. — Veronica Virginica, *Linn. sp.* 1. *p.* 9; *Michx. fl.* 1. *p.* 5; *Pursh, fl.* 1. *p.* 10; *Ell. sd.* 1. *p.* 10. Leptandra Virginica, *Nutt. gen.* 1. *p.* 7; *Torr. fl.* 1. *p.* 11; *Bigel. fl. Bost. p.* 6; *Beck, bot. p.* 263; *Darlingt. fl. Cest. p.* 6. Callistachya Virginica, *Raf. in. med. repos.* 5. *p.* 60.

Perennial. Stem strict, simple, 2 – 4 feet high, smooth. Leaves sometimes as many as six, and rarely only three, 2 or 3 inches long, tapering to a long sharp point, acutely serrate, smooth above, pubescent on the veins underneath. Flowers sessile, in long spikes, of which the principal one terminal; the others clustered and verticillate in the upper part of the stem. Corolla white, pubescent inside. Stamens much longer than the corolla, at length diverging: anthers cordate, whitish. Style finally exceeding the stamens: stigma capitate, somewhat 2-lobed. Capsule acuminate, opening about half way down by four teeth. Seeds numerous, obovoid, compressed.

Rich low grounds; rather common. July. The root is cathartic and diaphoretic, and has obtained some reputation as a domestic medicine. It is sometimes called *Culver's-root.* (See *Wood & Bache, U. S. Dispens. p.* 688.)

TRIBE VII. *GERARDIEÆ. Benth.*

Corolla campanulate, funnel-form or tubular; the limb 5-cleft, with flat rounded lobes. Stamens four, all fertile and ascending. Anthers 2-celled; the cells distinct, often acuminate. Capsule either loculicidal or septicidal. Seeds usually with a loose reticulated testa.

14. GERARDIA. *Linn.; Benth. in Hook. comp. bot. mag.* 1. *p.* 204; *Endl. gen.* 3996. *GERARDIA.*

[In honor of JOHN GERARD, an old English botanist, author of "A General History of Plants."]

Calyx campanulate, 5-toothed or 5-cleft. Corolla somewhat campanulate; the border unequally 5-lobed; the segments rounded, flat, partly spreading, entire. Stamens 4, didynamous,

included. Capsule ovoid or roundish, loculicidal; the valves usually entire. Seeds numerous, with a loose reticulated testa. — Herbs or rarely undershrubs, with the leaves opposite, or sometimes alternate, pinnatifid or entire. Flowers large and showy, axillary and solitary, yellow or purple. Most of the species turn blackish in drying.

* EUGERARDIA, Benth. *Flowers purple: calyx 5-toothed; lobes of the corolla entire: anthers acute, all equally 2-lobed and fertile, not spurred at the base. — Leaves entire.*

1. GERARDIA TENUIFOLIA, *Vahl.* *Slender-stalked Gerardia.*

Much branched; leaves linear, acute, smoothish; peduncles axillary, longer than the flowers; teeth of the calyx short, acute; corolla slightly pubescent.— *Vahl, symb.* 3. *p.* 79; *Nutt. gen.* 2. *p.* 47; *Pursh, fl.* 2. *p.* 422; *Ell. sk.* 2. *p.* 117; *Bart. fl. N. Am. t.* 82; *Bigel. fl. Bost. p.* 247; *Beck, bot. p.* 268; *Benth. l. c. p.* 209; *Darlingt. fl. Cest. p.* 365. G. erecta, *Walt. fl. Car. p.* 170; *Michx. fl.* 2. *p.* 20.

Annual. Stem 8 – 15 inches high, 4-angled, smoothish, with numerous spreading filiform branches. Leaves an inch or more in length, usually very narrow, but sometimes approaching to lanceolate, attenuate at each end, slightly rough on the margin. Peduncles filiform, often an inch or more in length. Teeth of the calyx scarcely as long as the tube, slightly ciliate; the sinuses obtuse. Corolla campanulate-funnelform, pale purple, spotted inside; the segments broad, rarely equal. Anthers cordate, villous on the face; the lobes acuminate at the base: filaments slightly hairy. Capsule nearly globose, not exceeding the calyx.

Dry woods; rather common throughout the State, except in the northern counties. *Fl.* August – September. *Fr.* October.

2. GERARDIA PURPUREA, *Linn.* *Rough-leaved Gerardia.*

Stem rough on the angles; leaves linear, very rough; peduncles very short; teeth of the calyx lanceolate-subulate.—*Linn. sp.* 2. *p.* 610; *Walt. fl. Car. p.* 170; *Michx. fl.* 2. *p.* 19; *Pursh, fl.* 2. *p.* 422; *Nutt. gen.* 2. *p.* 46; *Ell. sk.* 2. *p.* 117; *Bart. fl. N. Am. t.* 97; *Bigel. fl. Bost. p.* 247; *Beck, bot. p.* 267; *Benth. l. c. p.* 208; *Darlingt. fl. Cest. p.* 365; *Hook. fl. Bor.-Am.* 2. *p.* 104.

Annual or biennial. Stem 1 – 2 feet high, often much branched, quadrangular. Leaves 1 – 1½ inch long and 1 – 2 lines wide, tapering to a point, and curling as the plant dries. Peduncles 1 – 2 lines long. Calyx smoothish; the teeth nearly as long as the tube, acuminate: sinuses acute. Corolla about an inch long, bright purple; the lobes ciliate: inside of the upper ones, and of the throat almost woolly: lower side of the throat speckled with deeper purple, and marked with two long obscurely yellowish stripes. Stamens shorter than the tube of the corolla: filaments very villous: anthers cordate-ovate, hairy; the lobes acute at the base. Capsule nearly globose.

Swamps and low moist grounds, particularly where the water is brackish. Southern part of the State, and on Long Island. *Fl.* August – September. *Fr.* October.

3. GERARDIA MARITIMA, *Raf.* *Salt-marsh Gerardia.*

Stem smooth; leaves linear, short, fleshy, somewhat obtuse; peduncles much shorter than the flower; calyx turbinate, the teeth very short and rounded.—*Raf. in med. repos.* 2. *p.* 361; *Nutt. gen.* 2. *p.* 46; *Bigel. fl. Bost. p.* 247; *Torr. compend. p.* 241; *Beck, bot. p.* 268; *Benth. l. c. p.* 208. G. purpurea, *var.* crassifolia, *Pursh, fl.* 2. *p.* 422.

Annual. Stem 6 – 10 inches high, 4-angled, branching. Leaves 6 – 8 lines long, convex above, and decidedly fleshy. Flowers few, situated chiefly toward the summit of the stem and branches. Calyx appearing as if truncate; the teeth often scarcely apparent. Corolla half as large as in the preceding species, pale purple; the upper lobes conspicuously ciliate, dotted inside. Filaments hairy: anthers oblong; the lobes acute at the base. Capsule globose.

Salt marshes on the Island of New-York, and on Long Island. *Fl.* August – September. Some botanists regard this as a state of *G. purpurea*, altered by salt water; but I have not observed any intermediate forms. It is easily distinguished by its fleshy rather obtuse leaves and very short calyx-teeth.

** PEDICULARIOIDES, Benth. *Calyx half 5-cleft. Corolla yellow, tubular-campanulate. Cells of the anthers spurred at the base. — Leaves mostly lobed or pinnatifid.*

4. GERARDIA PEDICULARIA, *Linn.* *Bushy Gerardia.*

Stem paniculately branched, slightly pubescent; leaves smoothish, oblong, pinnatifid-incised; the lobes oblong, incisely toothed; flowers rather longer than the pedicels; segments of the calyx leafy, incisely toothed.—*Linn. sp* 2. *p.* 611; *Michx. fl.* 2. *p.* 19; *Pursh, fl.* 2. *p.* 424; *Nutt. gen.* 2. *p.* 48; *Bigel. fl. Bost. p.* 246; *Torr. compend. p.* 242; *Beck, bot. p.* 268; *Benth l. c. p.* 206; *Darlingt. fl. Cest. p.* 367.

Root perennial. Stem 2 – 4 feet high, much branched from the base upward, nearly terete, purplish, clothed with a minute close pubescence, viscid when young. Leaves 1 – 3 inches long, pinnatifidly cut into numerous oblong or ovate segments, uncinately toothed. Peduncles 5 – 10 lines long, glandularly pubescent, thickened upward. Calyx campanulate; the segments spreading and deeply toothed or incised. Corolla scarcely half as large as in *G. flava*, bright yellow, very caducous; the segments broad and rounded. Filaments slightly hairy: anther-lobes with a subulate horn at the base. Capsule globose-ovoid, with a short acumination.

Dry woods and rocky hill-sides; rather common throughout the State. *Fl.* August. *Fr.* October. This species is replaced at the South by *G. pectinata*, Torr. (G. Pedicularia, *Ell.*; G. Pedicularia, *var.* pectinata, *Nutt.*).

5. GERARDIA FLAVA, *Pursh.* (Plate LXXIV.) *Pubescent False Foxglove.*

Pubescent; stem mostly simple; leaves lanceolate or oblong-lanceolate; upper ones entire or sinuate-toothed, nearly sessile; the lower incised or somewhat pinnatifid, on longer petioles; flowers mostly on very short pedicels; segments of the calyx ovate-lanceolate. — *Michx. fl.* 2. *p.* 19; *Pursh, fl.* 2. *p.* 423; *Ell. sk.* 2. *p.* 119; *Bigel. fl. Bost. p.* 246; *Torr. compend. p.* 241; *Beck, bot. p.* 268; *Benth. l. c. p.* 205; *Darlingt. fl. Cest. p.* 366. G. villosa, *Muhl. cat. p.* 60. Rhinanthus Virginicus, *Linn. sp.* 2. *p.* 603.

Perennial. Stem 2 – 3 feet high, obtusely 4-angled, and, like the rest of the plant, densely and minutely pubescent, sometimes a little branched. Leaves 2 – 5 inches long and half an inch to an inch and a half wide, narrowed at the base into a short petiole; the lowest ones usually more or less deeply toothed or sinuate-pinnatifid; but sometimes all the leaves are entire, except the lower ones, which are furnished with one or two teeth near the base. Flowers an inch and a half long, on pedicels 1 – 2 lines in length. Segments of the calyx unequal. Corolla bright yellow. Filaments very hairy: anther-lobes with a subulate horn at the base. Capsule ovoid, acuminate. Testa of the seed with cristate winged ridges.

Fertile woods and copses, particularly in hilly situations; frequent. August.

6. GERARDIA QUERCIFOLIA, *Pursh.* *Glaucous False Foxglove.*

Stem paniculately branched, glaucous; leaves ovate-lanceolate, petiolate, the lower ones pinnatifid; flowers conspicuously pedicellate; calyx smooth, the segments lanceolate-linear. — *Pursh, fl.* 2. *p.* 423. *t.* 19; *Ell. sk.* 2. *p.* 120; *Benth. l. c. p.* 205. G. flava, *Linn. sp.* 2. *p.* 610, *&* *herb.* G. glauca, *Eddy in med repos.* 11. *p.* 126 (without a character); *Bigel. fl. Bost. p.* 246; *Torr. compend. p.* 241; *Beck, bot. p.* 268; *Darlingt. fl. Cest. p.* 366.

Perennial. Stem 3 – 5 feet high, obtusely 4-angled, purplish, and clothed with a glaucous bloom. Leaves 2 – 6 inches long and 1 – 3 inches wide: upper ones coarsely toothed or entire; the lower more or less deeply pinnatifid, and the segments also sometimes toothed. Pedicels 3 – 5 lines long. Calyx with the segments about the length of the tube. Corolla nearly as in the preceding species. Filaments nearly smooth: anthers hairy. Capsule roundish-ovoid, acuminate.

Rocky woods; rather less frequent than *G. flava.* *Fl.* August. This is the original *G. flava* of Linnæus, but it would cause too much confusion at this late day to restore the name.

TRIBE VIII. *RHINANTHEÆ. Benth.*

Corolla 2-lipped: upper lip concave, galeate or linear; the lower 3-cleft. Stamens 4 (rarely 2), ascending: anthers 2-celled; the cells distinct, parallel, often acuminate. Capsule loculicidal; the valves mostly entire. Seeds with a solid or loose arilliform testa, often winged.

15. CASTILLEJA. *Mutis; Endl. gen.* 4004. *PAINTED-CUP.*

EUCHROMA, *Nutt.*

[Named by Mutis after his friend *Castillejo*, of whom little is known.]

Calyx tubular-ventricose, spathe-like, 2 – 4-cleft. Corolla 2-lipped; the tube compressed: upper lip very long and narrow; lower short and 3-cleft or 3-toothed. Stamens 4: cells of the anthers divaricate, unequal. Capsule ovoid, compressed, 2-celled, loculicidal; the dissepiment bearing the seeds. Seeds with a loose transparent reticulated testa. — Herbs or shrubby plants, with alternate 3 – 5-cleft or entire leaves, of which the floral ones are bract-like and usually colored. Flowers axillary and solitary, or in a terminal spike: corolla greenish or whitish.

1. CASTILLEJA COCCINEA, *Spreng.* *Scarlet Painted-cup. Red-robin.*

Leaves and bracts pinnately 3 – 5-cleft, the segments linear and divaricate; calyx 2-cleft, nearly as long as the corolla, the segments retuse and emarginate —*Spreng. syst.* 2. *p.* 775; *Hook. fl. Bor.-Am.* 2. *p.* 105. Bartsia coccinea, *Linn. sp.* 2. *p.* 602; *Walt. fl. Car. p.* 167; *Michx. fl.* 2. *p.* 17; *Pursh, fl.* 2. *p.* 429; *Bigel. fl. Bost.* (subgen. CASTILLEJA), *p.* 244. Euchroma coccinea, *Nutt. gen.* 2. *p.* 55; *Ell. sk.* 2. *p.* 132; *Torr. compend. p.* 243; *Beck, bot. p.* 270; *Darlingt. fl. Cest. p.* 375.

Perennial. Stem 8 – 15 inches high, simple, dull red, pubescent. Leaves sessile, pubescent; the radical ones spatulate-oblong, entire, or toothed at the summit; the cauline mostly 5-cleft: the two lower segments very narrow and divaricate; upper ones near the summit, and much shorter. Spike composed of alternate closely sessile flowers. Bracts of a bright scarlet color towards the summit, 3-lobed and obtuse, at first nearly concealing the flowers. Calyx long and tubular, thin and membranaceous below; the lobes slightly retuse and tipped with scarlet. Corolla dull greenish yellow; the upper lip nearly three times longer than the lower, straight, truncate at the tip, concave and embracing the stamens and style; the lower with short acute segments. Anthers smooth, at first cohering, finally distinct. Style long and very slender, a little exserted: stigma incurved, somewhat 2-lobed. Capsule enclosed in the calyx, ovoid, acute, compressed.

Wet meadows; rather rare. *Fl.* April – May. *Fr.* June.

16. PEDICULARIS. *Linn.*; *Stev. in mem. soc. hist. nat. Mosq. vol.* 6; *Endl. gen.* 1015. *LOUSE-WORT.*

[From the Latin, *pediculus*, a louse; so named, it is said, because it produces the lousy disease in sheep which feed on it.]

Calyx ventricose, unequally 5-toothed, or 2-lipped; the upper lip 2-toothed or entire; the lower 3-toothed, or sometimes obliquely truncate. Corolla ringent; the upper lip galeate and often rostrate, emarginate; lower 3-lobed, the middle lobe narrowest. Capsule oblique, compressed, 2-celled, 2-valved, loculicidal; the dissepiment bearing the seeds towards its base. Seeds rather numerous, ovoid, with a prominent raphe; the testa conformed to the nucleus. — Herbs, usually with simple stems. Leaves alternate, opposite or verticillate, pinnatifid or incisely toothed. Flowers in dense or interrupted terminal bracteate spikes.

1. PEDICULARIS CANADENSIS, *Linn.* *Common Lousewort. Wood Betony.*

Stem simple, oblique; leaves pinnatifid, the segments crenate-toothed; spike leafy at the base; calyx obliquely truncate; galea of the corolla with two setaceous teeth.—*Linn. mant. p.* 86; *Walt. fl. Car. p.* 171; *Michx. fl.* 2. *p.* 18; *Pursh, fl.* 2. *p.* 425; *Ell. sk.* 2. *p.* 124; *Bigel. fl. Bost. p.* 425; *Sweet, Brit. fl. gard. t.* 67; *Beck, bot. p.* 269; *Darlingt. fl. Cest. p.* 374; *Stev. l. c. p.* 41. P. gladiata, *Michx. l. c.*

Perennial. Stems 6 – 12 inches high, often several from one root, pubescent. Radical leaves crowded, 2 – 4 inches long, petiolate, oblong-lanceolate, hoary pubescent when young, but nearly smooth when old: stem-leaves alternate and opposite. Flowers at first in an oblong leafy head, which is gradually elongated, and in fruit becomes a spike several inches in length. Calyx gibbous, obliquely truncate from above downward. Corolla brownish yellow, often mixed with dull purple. Style exserted between the teeth of the galea. Capsule somewhat ensiform.

Meadows, woods and moist thickets; very common. *Fl.* May. *Fr.* June.

2. PEDICULARIS LANCEOLATA, *Michx.* (Plate LXXV.) *Tall Lousewort.*

Stem erect, mostly branching, smoothish; leaves nearly opposite, lanceolate, crenately incised, with the segments denticulate-serrate, rough on the margin; calyx 2-cleft, with the lobes roundish-ovate and leafy, toothed; galea of the corolla truncate at the apex; capsule roundish-ovate. — *Michx. fl.* 2. *p.* 18; *Muhl. cat. p.* 58; *Pursh, fl.* 2. *p.* 424. P. pallida, *Pursh, fl.* 2. *p.* 424; *Nutt. gen.* 2. *p.* 50; *Torr. compend. p.* 242; *Beck, bot. p.* 269; *Darlingt. fl. Cest. p.* 374; "*Stev. l. c. p.* 18. *t.* 4. *f.* 2;" *Hook. fl. Bor.-Am.* 2. *p.* 107. P. Virginica, *Poir.* (ex *Hook.*).

Perennial. Plant 1 – 3 feet high, commonly with a pubescent line running alternately from joint to joint, sometimes simple, but usually more or less branched. Leaves 2 – 4 inches

long, somewhat coriaceous, rather distant, mostly opposite, the uppermost sometimes ternate, the base tapering into a short petiole. Calyx nearly smooth. Corolla closed, nearly an inch long, greenish yellow; the lower lip dilated towards the summit, its lateral segments rounded, the middle one somewhat saccate and carinate: upper lip less galeate than in the preceding species. Capsule scarcely exserted beyond the calyx.

Swamps; near New-York, and on Long Island and Staten Island. Troy (*Prof. Hall*); Niagara river (*Dr. Knieskern & Prof. Dewey*); near Albany (*Dr. L. C. Beck*). *Fl.* August – September. *Fr.* October.

17. MELAMPYRUM. *Linn.; Endl. gen.* 4018. *COW-WHEAT.*

[From the Greek, *melas*, black, and *pyros*, wheat: the seeds resemble grains of wheat, and are said, when mixed with flour, to make the bread black.]

Calyx tubular-campanulate, not inflated, 4-cleft or 4-toothed. Corolla ringent or personate: upper lip laterally compressed, with the sides reflexed; the lower almost equally 3-cleft or 3-toothed, with two gibbosities. Stamens 4. Capsule ovoid, compressed, somewhat acuminate, 2-celled, loculicidal. Seeds usually two, but sometimes only one, in each cell, cylindrical-oblong, smooth. — Annual herbs, with opposite narrow entire lower leaves; the floral leaves or bracts toothed. Flowers axillary, in a leafy raceme.

1. MELAMPYRUM AMERICANUM, *Michx.* *American Cow-wheat.*

Leaves lanceolate-linear or ovate-lanceolate, the floral ones with setaceous teeth at the base.—*Michx. fl.* 2. *p.* 16; *Bigel. fl. Bost. p.* 242; *Beck, bot. p.* 270; *Darlingt. fl. Cest. p.* 373. M. lineare, *Lam. dict.* 4. *p.* 33; *Pursh, fl.* 2. *p.* 430; *Ell. sk.* 2. *p.* 133. M. latifolium, *Muhl. cat. p.* 59; *Nutt. gen.* 2. *p.* 46.

Stem 8 – 15 inches high, with spreading opposite branches. Leaves more or less lanceolate, sometimes linear; the floral ones with several spreading setaceous teeth at the base. Flowers on short pedicels. Segments of the calyx lanceolate-linear. Corolla yellowish-white, with a tinge of purple; the lower lip yellow inside. Capsule membranaceous, somewhat lunate; the apex pointing downward, opening on the upper edge. Seeds 2 in each cell.

Dry woods; common. June – August. Bentham and Hooker consider this plant as identical with *M. sylvaticum* of Europe.

GROUP 9. *Ovary free from the calyx, either 2 – 4-lobed and becoming as many one-seeded achenia or little nuts, or else entire and drupaceous, including as many one-seeded nucules; sometimes dry and separable, but the cells never more than 2-ovuled. Corolla regular or irregular; the stamens inserted on its tube, equalling its lobes or fewer in number.*

ORDER LXX. VERBENACEÆ. *Juss.* THE VERVAIN TRIBE.

Calyx tubular, 4 – 5-toothed, often irregular, persistent. Corolla more or less irregular; the limb 4 – 5-lobed, sometimes 2-lipped. Stamens usually 4 and didynamous; the 2 upper (posterior) ones sometimes either sterile or wanting. Ovary entire, 2 – 4- (rarely 1-) celled, with 1 – 2 ascending ovules in each cell. Fruit drupaceous, baccate, or dry and splitting into 2 – 4 one-seeded carpels; rarely one-celled and indehiscent, with a single seed. Seeds with little or no albumen. — Herbs, shrubs or sometimes trees, with 4-angled stems and opposite leaves. Flowers mostly in spikes, heads or racemes.

1. VERBENA. *Linn.; Endl. gen.* 3685. *VERVAIN.*

[The name is said to be an alteration of the Celtic word *ferfaen*, which is derived from *fer*, to drive away, and *faen*, a stone; in allusion to its medicinal virtues.]

Calyx tubular, 5-toothed; one of the teeth often shorter than the others. Corolla tubular or somewhat funnel-form, with the limb rather unequally 5-lobed. Stamens sometimes only 2, or the upper pair abortive. Drupe with a thin evanescent epicarp, at length splitting into four 1-seeded carpels. Endocarp crustaceous. — Herbs or undershrubs. Flowers sessile, mostly in terminal spikes, bracteate.

1. VERBENA HASTATA, *Linn.* *Tall Blue Vervain. Simpler's Joy.*

Erect; leaves lanceolate or oblong-lanceolate, tapering to a point, incisely serrate, the lower ones often lobed or somewhat hastate at the base; spikes linear, erect, corymbose-paniculate, rather densely imbricated.—*Linn. sp.* 1. *p.* 10; *Michx. fl.* 2. *p.* 14; *Pursh, fl.* 2. *p.* 416; *Ell. sk.* 2. *p.* 98; *Bigel. fl. Bost. p.* 238; *Beck, bot. p.* 282; *Darlingt. fl. Cest. p.* 372. V. paniculata, *Lam. ill. p.* 57; *Pers. syn.* 2. *p.* 138; *Pursh, l. c.; Ell. l. c.; Lindl. bot. reg. t.* 1102; *Hook. fl. Bor.-Am.* 2. *p.* 117.

Root perennial. Stem 3 – 6 feet high, straight and somewhat rigid, rough and hairy, 4-sided. Leaves 3 – 5 inches long, rough; the lowest ones often with a lobe on each side

near the base, so as to appear somewhat hastate. Spikes numerous, 2 – 5 inches long, tapering at the summit, forming a large terminal panicle, which is often corymbose. Flowers at first densely imbricated, but the lower ones finally somewhat distant. Bracts ovate, acuminate, shorter than the 5-toothed calyx. Corolla about 2 lines long, deep purplish blue. Stamens 4. Fruit at length splitting into 4 oblong 3-sided carpels, usually regarded as seeds.

Wet meadows and margin of creeks. July – September.

2. VERBENA URTICIFOLIA, *Linn.* *Common Vervain.*

Erect; leaves oval or lanceolate-ovate, acute, coarsely serrate, petiolate; spikes filiform, axillary and terminal; flowers distinct.— *Linn. sp.* 1. *p.* 10; *Walt. fl. Car. p.* 162; *Engl. bot. t.* 767; *Michx. fl.* 2. *p.* 15; *Pursh, fl.* 2. *p.* 416; *Ell. sk.* 2. *p.* 99; *Bigel. fl. Bost. p.* 239; *Beck, bot. p.* 284; *Darlingt. fl. Cest. p.* 372.

Perennial. Stem 2 – 3 feet high, rather rough and pubescent, with slender spreading branches. Leaves 3 – 4 inches long and an inch and a half broad, thin, acutely serrate, abruptly narrowed into a petiole at the base. Spikes numerous, forming loose panicles, in fruit nearly a foot in length. Flowers much scattered. Bracts subulate, shorter than the calyx. Teeth of the calyx nearly equal, very acute. Corolla 2 lines long, white or sometimes slightly tinged with rose-color. Stamens 4. Fruit 4-carpelled.

Road-sides, old fields, etc.; very common. Probably introduced from Europe. July – September. This plant was held sacred among the ancients, and used in making leagues by ambassadors, sacrificial rites, incantations, etc. (*Loudon*).

Between this species and the preceding there are several intermediate hybrid forms, which, as well as other hybrid Verbenas, have been carefully and accurately described by Dr. Engelman in Silliman's Journal, vol. 46.

3. VERBENA SPURIA, *Linn.* *Procumbent Vervain.*

Stem prostrate, divaricately branched; leaves incisely pinnatifid; spikes filiform, loose.— *Linn. sp.* 1. *p.* 10; *Michx. fl.* 2. *p.* 14; *Pursh, fl.* 2. *p.* 416; *Ell. sk.* 2. *p.* 97; *Torr. compend. p.* 238; *Beck, bot. p.* 284.

Annual or biennial. Stem (when old) much branched, smoothish except on the angles, which are roughened with remote minute appressed prickles. Leaves sessile, hairy (particularly underneath), divided nearly to the midrib into numerous oblong rather obtuse segments which are laciniately toothed. Spikes numerous, forming loose panicles. Flowers at first close and imbricated, but at length remote and scattered. Bracts acute, one-third longer than the flower. Corolla rose-colored or purplish blue, with a manifest tube; the border unequally 5-lobed. Stamens 4; two of them apparently sterile. Fruit 4-carpelled.

Sandy fields in the suburbs of New-York, and near Albany. August – November.

4. VERBENA ANGUSTIFOLIA, *Michx.* *Narrow-leaved Vervain.*

Stems erect or inclined, mostly simple; leaves linear-lanceolate, attenuate at the base, remotely toothed, with elevated veins; spikes filiform. — *Michx. fl. 2. p. 14*; *Pers. syn. 2. p. 138*; *Torr. compend. p. 338*; *Beck, bot. p. 284*. V. rugosa, *Willd. enum. 1. p. 663*; *Pursh, fl. 2. p. 417*.

Perennial. Stem about a foot high, sometimes sparingly branched, rough with minute stiff hairs on the angles. Leaves 1½ – 3 inches long and 3 – 5 lines wide, with a long cuneate base, rough. Spike terminal, solitary, or several when the stem is branched, 2 – 6 inches long. Flowers at first somewhat imbricate, but finally loose, and the lower ones rather remote. Bracts lanceolate, as long as the calyx. Corolla twice as large as in *V. hastata*, purplish blue; the segments obovate. Stamens 4. Fruit 4-carpelled, striate and pitted.

Sandy fields and dry hill-sides on the Island of New-York. July – August.

2. PHRYMA. *Linn.; Lam. ill. t. 516*; *Juss. gen. p. 117.* *LOP-SEED.*

[Origin of the name uncertain.]

Calyx cylindrical, 2-lipped: upper lip longer, of three subulate bristly teeth; lower shorter, 2-toothed. Corolla 2-lipped: upper lip short, emarginate; lower much larger, flat, 3-lobed. Stamens 4, included. Ovary oblong, one-celled, with a solitary ascending ovule, tapering into a slender style: stigma 2-lobed. Fruit narrowly oblong, membranaceous but rather thick, enclosed in the calyx; the persistent style arising from a little below the obtuse summit. Seed conformed to the cavity of the pericarp. Cotyledons large and foliaceous, replicate and folded one within the other. Albumen none. — Herbaceous, with opposite ovate leaves. Flowers opposite, in long slender simple and terminal spikes. Calyx reflexed after flowering, and bent close to the rachis.

Endlicher has unaccountably referred this genus to PRIVA of Adanson, to which it has scarcely any resemblance.

1. PHRYMA LEPTOSTACHYA, *Linn.* *Lopseed.*

Linn. sp. 2. p. 601; *Walt. fl. Car. p. 166*; *Michx. fl. 2. p. 13*; *Pursh, fl. 2. p. 415*; *Ell. sk. 2. p. 96*; *Bigel. fl. Bost. p. 241*; *Torr. compend. p. 238*; *Beck, bot. p. 284*; *Darlingt. fl. Cest. p. 371*.

Perennial. Stem about two feet high, with two or more spreading virgate branches above, pubescent, slender. Leaves ovate, 3 – 5 inches long, spreading, coarsely and unequally toothed, thin; the lower ones abruptly narrowed at the base, and furnished with long petioles; the uppermost nearly or quite sessile. Spikes 3 – 6 inches long. Flowers small and delicate, nearly sessile, mostly opposite but occasionally alternate, at first somewhat erect, then spreading horizontally, bent abruptly downward. Calyx smooth, at first cylindrical, but at length dilated toward the base; the teeth of the upper lip purplish, rigid, recurved: lower lip

of 2 short pubescent teeth. Corolla pale purple, or light rose-color; the lower lip spreading, with obtuse lobes, veined. Fruit oblong, closely covered with the persistent calyx; the pericarp of a leathery consistence, its cavity completely filled with the seed. Testa thin and membranaceous.

Borders of woods and in copses, usually in rich moist soils; frequent. *Fl.* July. *Fr.* August.

ORDER LXXI. LABIATÆ. *Juss.* THE MINT TRIBE.

Calyx tubular, persistent, 2-lipped, or 5-toothed or -cleft. Corolla 2-lipped. Stamens 4, didynamous, or only 2 (the upper pair being abortive or wanting). Ovary deeply 4-lobed; the style proceeding from the base of the lobes, and uniting them together. Fruit consisting of 4 (or by abortion fewer) little nuts or achenia, which are included in the persistent calyx. Seeds with little or no albumen. — Herbs or somewhat shrubby plants, with 4-angled stems, and opposite or sometimes whorled leaves which are destitute of stipules. Flowers in axillary or terminal cymules, which are often spuriously whorled. — The leaves, calyces, and often other parts of the plant are abundantly furnished with minute glands or receptacles, which are filled with aromatic volatile oil.

CONSPECTUS OF THE TRIBES.

Tribe I. MENTHOIDEÆ. Corolla somewhat campanulate or funnel-form; the tube scarcely longer than the calyx; the limb almost equally 4 – 5-cleft. Stamens distant, straight or diverging, nearly equal, or the upper pair sometimes wanting.

Tribe II. MONARDEÆ. Corolla 2-lipped. Stamens 2 fertile (rarely 4), ascending: anthers linear and confluent at the summit; or halved, the cells separated by a long linear connective, which is transversely articulated to the summit of the filament.

Tribe III. SATUREINEÆ. Corolla somewhat 2-lipped; the lips plane. Stamens 4 (sometimes 2), straight, diverging; the lower pair longer: anthers not dimidiate.

Tribe IV. MELISSINEÆ. Calyx mostly 13-nerved, 2-lipped. Corolla 2-lipped; the divisions flattish, or the upper lip rarely galeate. Stamens 4, or sometimes 2, ascending.

Tribe V. SCUTELLARINEÆ. Upper lip of the calyx truncate, entire or somewhat 3-toothed. Corolla 2-lipped; the upper lip galeate. Stamens 4, ascending; the lower pair longer.

Tribe VI. NEPETEÆ. Calyx oblique or somewhat 2-lipped. Corolla 2-lipped; the upper lip galeate. Stamens 4; the upper pair longer.

Tribe VII. STACHYDEÆ. Calyx 5 – 10- (never 13-) nerved, or irregularly veined. Corolla 2-lipped. Stamens 4; the lower pair longer. Achenia smooth when dry.

Tribe VIII. AJUGOIDEÆ. Stamens 4, ascending from the very short or cleft upper lip of the corolla, and generally much exserted. Achenia reticulately rugose.

TRIBE I. *MENTHOIDEÆ. Benth.*

Corolla somewhat campanulate or funnel-form; the limb almost equally 4 – 5*-cleft: tube scarcely longer than the calyx. Stamens four (or the upper pair sometimes wanting), straight or diverging, nearly equal.*

1. ISANTHUS. *Michx. fl.* 2. *p.* 3; *Benth. Lab. p.* 166. *FALSE PENNYROYAL.*

[From the Greek, *isos*, equal, and *anthos*, a flower; the corolla being nearly regular.]

Calyx campanulate, 10-nerved, deeply 5-toothed; the throat naked inside. Corolla about as long as the calyx; the tube straight and short: limb campanulate, of five equal obtuse somewhat spreading lobes. Stamens 4, nearly equal, distant, erect, as long as the corolla: cells of the anthers parallel, or at length diverging. Style 2-cleft at the summit; the lobes subulate. Achenia large, rough with little pits. — An annual, much branched, viscidly pubescent herb, with few-flowered cymules and entire leaves.

1. ISANTHUS CÆRULEUS, *Michx.* *False Pennyroyal.*

Michx. l. c. t. 30; *Pursh, fl.* 2. *p.* 405; *Muhl. cat. p.* 58; *Torr. compend. p.* 233; *Beck, bot. p.* 271; *Benth. Lab. p.* 167. Trichostema brachiata, *Linn. sp.* 2. *p.* 598; *Willd. sp.* 3. *p.* 170; *Pursh, l. c.*

Stem 8 – 15 inches high, obtusely 4-angled, with numerous opposite spreading branches. Leaves about an inch long, elliptical-lanceolate, narrowed at each end, strongly 3-nerved. Cymules numerous, axillary, on short peduncles, 1 – 3-flowered, shorter than the leaves. Calyx-segments acuminate, rough and somewhat glandular. Corolla scarcely two lines long, pale blue. Achenia ovoid-oblong.

Sandy and gravelly banks of rivers; common on the Hudson, from the Highlands upward. Banks of the Erie canal between Albany and Schenectady (*Dr. Knieskern*); Jefferson county (*Dr. Crawe*). July – August. In the form of the corolla, this genus resembles MENTHA; but in habit, and in the rugose-pitted achenia, it is nearly related to *Trichostema* of the tribe AJUGOIDEÆ.

2. MENTHA. *Dinn.; Benth. Lab. p.* 168, *Endl. gen.* 3954. *MINT.*

From *Minthe*, a daughter of Cocytus; who, according to fable, was changed into this plant.]

Calyx campanulate or tubular, 5-toothed, equal or somewhat 2-lipped. Corolla nearly regular, 4-lobed; the broadest lobe emarginate. Stamens 4, erect, distant. Achenia smooth. — Herbaceous, very odorous plants, with the cymules verticillate, capitate, or in whorled spikes.

1. MENTHA VIRIDIS, *Linn.* *Spearmint.*

Stem erect, smooth ; leaves nearly sessile, ovate-lanceolate, unequally serrate, smoothish ; flowers in a verticillate slender spike, the whorls approximated, or the lower ones rather remote ; teeth of the calyx and bracts hairy. — *Engl. bot. t.* 2424 ; *Bigel. fl. Bost. p.* 234 ; *Torr. compend. p.* 233 ; *Beck, bot. p.* 272 ; *Darlingt. fl. Cest. p.* 339 ; *Benth. Lab. p.* 173. M. tenuis, *Michx. fl.* 2. *p.* 2 ; *Pursh, fl.* 2. *p.* 405 ; *Ell. sk.* 2. *p.* 72.

Root perennial, creeping. Stem 1 – 2 feet high, branching. Leaves $1\frac{1}{2}$ – 3 inches long, sharply serrate, sometimes a little pubescent underneath. Spikes numerous, forming a sort of panicle, 2 – 4 inches long, tapering to a point. Bracts subulate, with a bristle-like point. Calyx usually smoothish, except the hispid teeth. Corolla pale purple. Stamens mostly shorter than the corolla, but sometimes exserted. Style much exserted, a little cleft at the summit.

Wet meadows, particularly along the margin of brooks ; common. Introduced from Europe, but now perfectly naturalized. July – August. This plant has long been a popular remedy for flatulence ; and is too well known throughout the country as an ingredient of intoxicating juleps.

2. MENTHA PIPERITA, *Linn.* *Peppermint.*

Stem smooth ; leaves petiolate, ovate-oblong, acute, serrate, smoothish ; spikes oblong ; pedicels and base of the calyx smooth ; calyx-teeth hispid.—*Linn. sp.* 2. *p.* 576 ; *Engl. bot. t.* 687 ; *Beck, bot. p.* 272 ; *Darlingt. fl. Cest. p.* 339 ; *Benth. Lab. p.* 175.

Root perennial. Stem ascending, branching, mostly of a purplish color. Leaves 1 – 2 inches long, dark green, rounded at the base ; the petioles 2 – 3 lines long. Spikes about an inch long, composed of few whorls. Bracts linear-lanceolate, hispid. Corolla pale purple. Stamens mostly included. Style exserted.

Moist grounds, and shores of rivers. Banks of the Hudson, particularly in the Highlands ; also in the western counties. Introduced from Europe, but rarer than the preceding. Its odor and other properties are known to every one.

3. MENTHA CANADENSIS, *Linn.* *Canadian Mint.*

Stem ascending, pubescent ; leaves oval-lanceolate, petiolate, serrate, acute at each end ; whorls globose, many-flowered, remote ; bracts linear-lanceolate, as long as the calyx ; stamens exserted. — *Linn. sp.* 2. *p.* 577 ; *Pursh, fl.* 2. *p.* 405 ; *Torr. compend. p.* 233 ; *Beck, bot. p.* 272 ; *Darlingt. fl. Cest. p.* 340 ; *Benth. Lab. p.* 181. M. borealis, *Michx. fl.* 2. *p.* 2 ; *Pursh, l. c.* ; *Bigel. fl. Bost. p.* 234 ; *Torr. compend. l. c.* ; *Beck, bot. l. c.*

Plant of a grayish green color, with an odor resembling that of Pennyroyal (*Hedeoma pulegioides*). Stem 1 – 2 feet high, retrorsely hairy or pubescent and white on the angles,

usually almost simple, but sometimes branching, rather stout. Leaves 2 – 3 inches long and three-fourths of an inch wide, hairy, particularly underneath. Flowers in dense axillary whorls; the peduncles of the cymules 2 – 3 lines long. Calyx hairy. Corolla pale purple. Stamens nearly twice as long as the corolla.

Low grounds along rivulets; rather common. July – September. This is probably the only species of Mint native of North America.

3. LYCOPUS. *Linn; Benth. Lab. p.* 184; *Endl. gen.* 3595. *WATER HOREHOUND.*

[From the Greek, *lukos*, a wolf, and *pous*, a foot; from a supposed resemblance of its leaves to the foot of that animal.]

Calyx tubular-campanulate, 4 – 5-toothed, naked in the throat. Corolla tubular-campanulate, about as long as the calyx; the limb almost equally 4-lobed. Stamens 2, distant (sometimes with the upper pair rudimentary). Achenia 4, smooth, obliquely truncate at the apex. —Herbs, mostly growing in wet places, with acutely toothed or pinnatifid leaves, and small flowers in dense axillary whorls.

1. LYCOPUS SINUATUS, *Ell.* *Common Water Horehound.*

Stem erect, acutely 4-angled; leaves oblong-lanceolate, petiolate, sinuately toothed, the lower ones more or less pinnatifidly incised; whorls many-flowered; calyx 5-toothed, the teeth acuminated with a short spine, much longer than the achenia. — *Ell. sk.* 1. *p.* 187; *Benth. Lab. p.* 187; *Darlingt. fl. Cest. p.* 341; *Hook. fl. Bor.-Am.* 2. *p.* 111. L. Europæus, *Michx. fl.* 1. *p.* 14; *Pursh, fl.* 1. *p.* 16; *Bigel. fl. Bost. p.* 9; *Beck, bot. p.* 271. L. Europæus, *var.* angustifolius, *Torr. fl.* 1. *p.* 21. L. Americanus, *Muhl. cat. p.* 3; *Bart. fl. Philad.* 1. *p.* 12. L. exaltatus, *Pursh, l. c. p.* 727; *Ell. sk.* 1. *p.* 26, not of *Linn.*

Perennial. Stem 1 – 2 feet high, much branched; the sides concave. Leaves 2 – 3 inches long, narrowed at the base, acute, nearly smooth, sprinkled with minute glandular dots; the teeth coarse and acute; the lower ones often finely pinnatifid. Whorls densely flowered. Calyx smoothish; the teeth 3-nerved, tapering into a spine-like or subulate point. Corolla white or sometimes with a tinge of red, pubescent inside. Stamens shorter than the corolla. Style 2-cleft; the lobes very unequal, the longer one flattened and somewhat dilated.

Low wet grounds; common. July – August. Mr. Bentham notices a pair of capitate rudimentary sterile stamens in this species, but I did not find them in the specimens that I examined.

2. LYCOPUS VIRGINICUS, *Linn.* *Bugle-weed.*

Stem stoloniferous at the base; leaves oblong- or ovate-lanceolate, serrate-toothed, narrowed at each end; calyx mostly 4-toothed, the teeth ovate, spineless.— *Linn. sp.* 1. *p.* 21; *Walt. fl. Car. p.* 64; *Michx. fl.* 1. *p.* 14; *Pursh, fl.* 1. *p.* 16; *Ell. sk.* 1. *p.* 25; *Bigel. fl. Bost.*

p. 9 ; *Torr. fl.* 1. *p.* 21 ; *Beck, bot. p.* 271 ; *Darlingt. fl. Cest. p.* 340 ; *Benth. Lab. p.* 185 ; *Hook. fl. Bor.-Am.* 2. *p.* 111. L. uniflorus, *Michx. l. c.* ; *Torr. l. c.* ; *Beck, l. c.* L. pumilus, *Vahl, enum.* 1. *p.* 211 ; *Pursh, l. c.*

Root perennial, creeping. Stem 10 – 18 inches high, often throwing out (particularly late in the season) long filiform suckers, mostly purplish, obtusely angled with the sides concave, simple or sparingly branched. Leaves 2 – 4 inches long, often of a dark purplish color ; the base long, cuneate and entire. Flowers very minute, in close compact whorls ; sometimes (in dwarf specimens) almost solitary. Calyx much shorter than the corolla ; the teeth rather acute, but terminating in little spines. Corolla white, slightly dotted ; the tube a little ventricose. Achenes rather longer than the calyx when mature.

Shady wet grounds, and in moist woods ; common. July – August. This plant is a mild astringent and narcotic, and has at different times been celebrated as a remedy for bleeding of the lungs ; but its virtues have been greatly overrated. (See *Wood and Bache's U. S. Dispens. pp.* 428 & 430.)

TRIBE II. *MONARDEÆ. Benth.*

Calyx 2-lipped. Stamens two fertile (the upper pair wanting), ascending : anthers linear, with two contiguous cells which are divaricate at the base and confluent at the apex ; or halved, and the cells united by a long slender connective which is transversely articulated to the summit of the filament.

4. MONARDA. *Linn. ; Benth. Lab. p.* 315 ; *Endl. gen.* 3600. *SAGE.*

[In honor of NICHOLAS MONARDEZ, a Spanish botanist of the 16th century.]

Calyx tubular, elongated, 15-nerved, nearly equal 5-toothed. Corolla ringent : upper lip linear, involving the filaments ; lower broader, reflexed, 3-lobed ; the lateral lobes ovate, obtuse ; middle lobe narrower, oblong : tube slender. Stamens 2, exserted from the upper lip of the corolla. Achenia smooth. — Perennial herbs, with toothed or crenate leaves. Flowers large, in few dense whorls, with conspicuous bracts.

1. MONARDA DIDYMA, *Linn.* *Oswego Tea.*

Leaves ovate or ovate-lanceolate, acuminate, mostly rounded or somewhat cordate at the base a little hairy, the floral ones and large exterior bracts colored ; calyx smooth, incurved, naked in the throat ; corolla smoothish.—*Linn. sp.* 1. *p.* 22 ; *Bot. mag. t.* 546 ; *Pursh, fl.* 1. *p.* 16 ; *Torr. fl.* 1. *p.* 24 ; *Beck, bot. p.* 275 ; *Benth. Lab. p.* 315 ; *Hook. fl. Bor.-Am.* 2. *p.* 112. M. coccinea, *Michx. fl.* 1. *p.* 16. M. purpurea, *Lam. dict.* 4. *p.* 256. M. Kalmiana, *Pursh, l. c. t.* 1.

Stem 1 – 2 feet high, prominently 4-angled, a little pubescent, branching; the joints villous. Leaves 3 – 5 inches long and 1 – 2 inches broad, somewhat hairy on both sides, particularly on the veins underneath, sometimes acute at the base: petioles half an inch or more in length. Flowers in one or two (rarely in three) whorls, which resemble proliferous heads. Bracts large and purplish. Calyx about half an inch long, smooth, scarlet; the teeth subulate. Corolla bright scarlet, an inch and a half in length, with the tube tapering downward. Stamens exserted a little beyond the upper lip of the corolla.

Moist fertile meadows and borders of streams: northern and western parts of the State. July – August. A highly ornamental plant, and frequently cultivated in gardens.

2. MONARDA FISTULOSA, *Linn.* *Horse-mint. Wild Bergamot.*

Leaves petiolate, ovate-lanceolate, rounded and somewhat cordate at the base, smooth on both sides, or pubescent-hispid, the floral ones and exterior bracts a little colored; calyx somewhat curved and scarcely colored, the throat hispid inside; corolla smooth or villous (*Benth.*).— *Linn. sp.* 1. *p.* 20; *Pursh, fl.* 1. *p.* 18; *Ell. sk.* 1. *p.* 29; *Bot. mag. t.* 3310; *Torr. fl.* 1. *p.* 26; *Beck, bot. p.* 276; *Darlingt. fl. Cest. p.* 343; *Reich. ic. exot.* 2. *t.* 170; *Benth. Lab. p.* 317; *Hook. l. c.* M. rugosa & oblongata, *Ait. Kew.* (ed. 2.) 1. *p.* 52; *Pursh, l. c.* M. clinopodia, *Linn. l. c.; Pursh, l. c.; Ell. l. c.* M. allophylla, *Michx. fl.* 1. *p.* 16; *Bigel. fl. Bost. p.* 9.

Stem 2 – 3 feet high, branched, smooth or a little hairy (particularly the branches), commonly of a purple color, either fistular or filled with pith. Leaves 2 – 4 inches long and 1 – 2 inches wide, rather coarsely and uncinately serrate: petiole 4 – 8 lines long, hairy, ciliate. Heads 2 inches in diameter when the flowers are expanded, terminal or proliferous. Outer bracts varying from broadly ovate to ovate-lanceolate, partly colored with purple and greenish white. Corolla violet-purple or pale rose-color, pubescent and covered with shining glandular dots: upper lip long and linear, somewhat falcate, a little villous at the tip; the tube slender, about half an inch long.

Hill-sides, and rocky banks of rivers; frequent in the western counties. July – August. I have followed Bentham in uniting to *M. fistulosa* several species of other authors, being convinced that they are inconstant forms produced by variations of soil and situation.

3. MONARDA PUNCTATA, *Linn.* *Horse-mint.*

Minutely pubescent; leaves lanceolate, petiolate, remotely serrate, narrowed at the base; flowers in dense remote capitate whorls; bracts lanceolate, obtuse at the base, colored; calyx pubescent, with short rigid teeth; corolla smooth, the lower lip spotted.—*Linn. sp.* 1. *p.* 22; *Walt. fl. Car. p.* 64; *Pursh, fl.* 1. *p.* 18; *Ell. sk.* 1. *p.* 30; *Torr. fl.* 1. *p.* 26; *Bot. reg. t.* 87; *Beck, bot. p.* 276. M. lutea, *Michx. fl.* 1. *p.* 16.

Stem 2 – 3 feet high, branching, rather obtusely 4-angled, white with a very short pubescence. Leaves varying from rather narrowly- to oblong-lanceolate, tapering to a point; the teeth short. Bracts large, colored with yellow and purplish red. Flowers in several whorled heads. Calyx somewhat curved, with a short beard in the throat; the teeth lanceolate-subulate, a little spreading. Corolla dull yellow; the upper lip villous at the tip.

Sandy fields and dry banks; common on Long Island. Jefferson county (*Mr. G. Vasey*); Near Owego, Susquehannah valley (*Dr. Knieskern*). August – September. This plant has a strong odor of pennyroyal. An essential oil is extracted from it, which is much esteemed as an external remedy for rheumatism, and is also employed for sick stomach and flatulent colic. (See the *Phil. Med. Recorder, vol.* 2. *p.* 494, with an accurate figure.)

5. BLEPHILIA. *Raf. in journ. phys.* 89. *p.* 98; *Benth. Lab. p.* 319. BLEPHILIA.

Species of MONARDA, *Linn. &c.*

[From *blepharis*, the Greek for eyelash; probably in allusion to the fringed calyx-teeth.]

Calyx ovoid-tubular, 13-nerved, 2-lipped, naked in the throat: upper lip of 3 awned teeth; lower lip 2-toothed. Corolla 2-lipped; the lips nearly equal in length: upper erect, entire; lower spreading, 3-lobed; the lateral lobes ovate-roundish; middle one oblong, retuse: tube dilated in the throat. Stamens 2: anther-lobes at length widely divaricate. Style unequally 2-cleft at the summit.— Herbs with the habit of MONARDA. Flowers in several dense globose whorls.

1. BLEPHILIA HIRSUTA, *Benth.* *Hairy Blephilia.*

Plant hairy; leaves ovate, on long petioles, rounded and more or less cordate at the base; lower teeth of the calyx very short, awnless.—*Benth. Lab. p.* 320. Monarda hirsuta, *Pursh, fl.* 1. *p.* 19; *Torr. fl.* 1. *p.* 27; *Beck, bot. p.* 277. M. ciliata, *Michx. fl.* 1. *p.* 16, not of *Linn.*

Perennial. Stem 2 – 3 feet high, with spreading branches, clothed with spreading or retrorse villous hairs. Leaves 2 – 4 inches long and 1 – 2 inches broad, thin, hairy on both sides, serrate, acuminate: petioles 4 – 10 lines long, hairy. Whorls about three-fourths of an inch in diameter, often somewhat approximate toward the summit of the stem and branches in a kind of spike; at other times remote. Tube of the calyx smooth; the lower lip distant from the upper; the teeth short and acuminate: those of the upper lip with long subulate points: all the teeth fringed with several long spreading hairs. Corolla small, pale bluish purple, with darker spots.

Borders of moist woods in the northern parts of the State. August.

TRIBE III. *SATUREINEÆ. Benth.*

Calyx 5-toothed and equal; or 2-lipped, with the upper lip 3-toothed and the lower 2-cleft. Corolla somewhat 2-lipped; the upper lip erect, flat, entire, or deeply emarginate; lower spreading, 3-cleft; the lobes nearly equal: tube about as long as the calyx. Stamens 4, or sometimes 2, distant, diverging.

CONSPECTUS OF THE GENERA.

* *Fertile stamens 4.*

6. PYCNANTHEMUM. Calyx equal or 2-lipped, naked inside. Upper lip of the corolla oblong, entire or emarginate. — Herbs, with the whorls many-flowered and bracteate.

7. ORIGANUM. Calyx almost equally 5-toothed, villous in the throat. Spikelets imbricate, with broad bracts.

** *Fertile stamens 2.*

8. COLLINSONIA. Calyx 2-lipped; upper lip truncate, 3-toothed. Corolla 4-lobed; the three upper lobes nearly equal; the lower larger, toothed or fimbriate.

9. CUNILA. Calyx almost equally 5-toothed. Upper lip of the corolla scarcely longer than the others, emarginate or nearly entire.

6. PYCNANTHEMUM. *Michx. fl. 2. p. 7; Benth. Lab. p. 326.* *MOUNTAIN MINT.*

[From the Greek, *pyknos*, dense, and *anthemon*, a flower; the flowers being in close heads or clusters.]

Calyx oblong-tubular, about 13-nerved, equally 5-toothed, or more or less 2-lipped. Corolla somewhat 2-lipped; the upper lip flat, entire or slightly emarginate: lower lip almost equally 3-lobed; the lobes ovate, obtuse. Stamens 4, nearly equal, distant: anthers with parallel cells. — Perennial herbs, corymbosely paniculate. Flowers small, white or flesh-colored, in dense cymulose bracteate heads which are mostly terminal.

* *Calyx 2-lipped: flowers in rather loose cymose heads. Leaves petiolate.*

1. PYCNANTHEMUM INCANUM, *Michx. Common Mountain Mint. Wilsh Mint.*

Leaves ovate-oblong, petiolate, acute, remotely serrate, pubescent, hoary-tomentose underneath, the floral ones white on both sides; flowers in compound cymose heads; bracts linear-subulate; teeth of the calyx lanceolate, acuminate.—*Michx. fl. 2. p. 7; Pursh, fl. 2. p. 409; Nutt. gen. 2. p. 33; Ell. sk. 2. p. 79; Bigel. fl. Bost. p. 238; Beck, bot. p. 272; Benth. Lab. p. 327; Darlingt. fl. Cest. p. 344; Gray, in Sill. jour. 42. p. 45.* Clinopodium incanum, *Linn.; Willd. sp. 3. p. 132.* Origanum incanum, *Walt. fl. Car. p. 165; Dill. hort. Elth. t. 74. f. 85; Pluk. mant. t. 344. f. 7.*

Stem 2 – 4 feet high, branching, obtusely 4-angled. Leaves $1\frac{1}{2}$ – 2 inches long, acute at the base, with small distant salient teeth; the lower ones pale green above, and whitish, velvety-pubescent underneath: petioles 4 – 8 lines long. Flowers in pedunculate compound fastigiate heads or cymes. Bracts subulate, awned. Calyx hoary, pretty distinctly 2-lipped; the teeth with one or two bristles at the summit. Corolla white or pale rose-color, spotted with purple, pubescent; the upper lip small, oblong. Stamens a little exserted. Ovary bearded.

Dry rocky woods and hill-sides; rather common, particularly in the southern part of the State. August – September. This and most of the other species have a taste intermediate to that of Pennyroyal and Spearmint.

2. PYCNANTHEMUM CLINOPODIOIDES, *T. & G.* *Basil-leaved Mountain Mint.*

Cymose heads contracted; teeth of the calyx somewhat equal, short, subulate, and with the summit canescently hairy; leaves oblong-lanceolate, acute at each end, slightly serrate, smooth above, the under surface (and also the stem) softly villous-pubescent; petioles short; bracts linear-subulate; teeth of the calyx lanceolate, acuminate. — *Gray, l. c.*

Stem 1½ – 2 feet high, clothed with a soft loose pubescence, sparingly branched. Leaves 2 – 3 inches long and 3 – 8 lines wide, pale green but never hoary (except the floral ones in a slight degree), remotely denticulate-serrate, dotted, smoothish above. Heads more than half an inch in diameter. Teeth of the calyx with bristly hairs at the summit. Corolla white: upper lip entire or slightly emarginate; middle lobe of the lower lip longest. Stamens moderately exserted. Ovary bearded.

Dry rocky hill-sides. Kingsbridge on the Island of New-York. August – September. The broader leaved forms of this species make an approach to the narrow-leaved varieties of *P. incanum*, but are easily distinguished by the other characters enumerated above, particularly the want of hoariness in the foliage, and the small size of the heads.

** *Calyx almost equally toothed; the cymules rather loosely capitate, mostly terminal in a corymbose panicle: bracts shorter than the flowers. Leaves sessile, or on very short petioles.*

3. PYCNANTHEMUM TORREI, *Benth.* *Torrey's Pycnanthemum.*

Stem strict, pubescent; leaves varying from linear-lanceolate to oblong-linear, smoothish, acute, remotely denticulate, narrowed at the base into a short petiole; cymose heads contracted, depressed-hemispherical; calyx with nearly equal lanceolate acuminate teeth, and the bracts whitish pubescent. — *Benth Lab. p.* 329; *Gray, l. c.* P. Virginicum, *Nutt. gen.* 2. *p.* 33?

Stem about 2 feet high, slender, purplish, clothed with a short soft spreading pubescence, moderately branching. Leaves 2 – 3 inches long and about one-third of an inch wide, thin, pubescent-ciliolate on the margin and a little downy on the veins underneath, pale green on both sides. Heads rather more than half an inch in diameter, rarely proliferous, formed of densely aggregated cymules not truly capitate. Teeth of the calyx with several bristly hairs at the summit. Corolla 2-lipped, white; the upper lip emarginate; middle lobe of the lower lip longest. Stamens exserted. Ovary naked at the summit.

Dry rocky hill-sides, near Kingsbridge on the Island of New-York. August – September. Intermediate between the preceding and *P. lanceolatum*. From the former it differs in its narrow leaves, as well as in the smaller and more compact heads; from the latter, in the broader and petiolate leaves, narrow loose bracts, the flowers in clustered cymules (not in dense heads), the larger and more ringent corolla, and in the exserted stamens. It is a rare species, and has hitherto been found only in the above mentioned locality and in two other places in New-Jersey.

4. PYCNANTHEMUM MUTICUM, *Pers.* *Veiny-leaved Mountain Mint.*

Stem fastigiately paniculate at the summit, minutely pubescent or nearly smooth; leaves nearly sessile, ovate or ovate-lanceolate, rigid, usually denticulate-serrate, prominently veined, nearly smooth, obtuse at the base, the upper ones canescent; flowers in dense cymulose heads; calyx canescent, the teeth equal, triangular-ovate, short. — *Pers. syn.* 2. *p.* 128; *Pursh, fl.* 2. *p.* 410; *Ell. sk.* 2. *p.* 83; *Torr. compend. p.* 235; *Beck, bot. p.* 273; *Benth. Lab. p.* 329; *Darlingt. fl. Cest. p.* 344. Brachystemum muticum, *Michx. fl.* 2. *p.* 6. *t.* 32. P. aristatum, *Bigel. fl. Bost. p.* 238, not of *Michx.* Satureja Virginiana, *Linn. sp.* 2. *p.* 598?

Stem about 2 feet high, rigid, greenish; the branches widely spreading, and usually level-topped. Leaves 1 – 2 inches long and three-fourths of an inch wide, sometimes entire, at length quite smooth; the lower ones on very short petioles; the uppermost, as well as the heads and summit of the branches, canescent. Heads usually solitary, but sometimes proliferous, hemispherical, nearly half an inch in diameter, very dense, but composed of numerous short cymules. Exterior bracts ovate-lanceolate, acuminate. Corolla pubescent, pale flesh-color spotted with purple; the middle segment of the lower lip oblong and emarginate. Stamens included. Style equally 2-cleft at the summit. Ovary smooth.

Dry hill-sides. Island of New-York. August.

**** Teeth of the calyx equal: flowers in numerous small dense terminal heads: bracts rigid and appressed: lips of the corolla short: ovary naked. Leaves sessile, narrow, thick.*

5. PYCNANTHEMUM LANCEOLATUM, *Pursh.* *Virginian Thyme.*

Stem pubescent on the angles; leaves lanceolate or lanceolate-linear, entire, rigid; bracts ovate-lanceolate, acuminate; calyx villous, the teeth triangular-ovate, short. — *Pursh, fl.* 2. *p.* 410; *Torr. compend. p.* 235; *Beck, bot. p.* 273; *Benth. Lab. p.* 330, excl. var. *α.*; *Darlingt. fl. Cest. p.* 345, excl. var. *latifolium*; *Gray, l. c.* P. Virginicum, *Pers. syn.* 2. *p.* 128; *Ait. Kew.* (ed. 2.) 3. *p.* 377; *Nutt. gen.* 2. *p.* 33. Nepeta Virginica, *Willd. sp.* 3. *p.* 56. Brachystemum Virginicum, *Michx. fl.* 2. *p.* 6; *Bigel. fl. Bost. p.* 237 (in part?).

Stem two feet high, straight, fastigiately branched, minutely pubescent, especially on the angles. Leaves 1 – 2 inches long and 2 – 5 lines wide, sessile or with very short petioles, broad at the base and tapering to a rather obtuse point, distinctly punctate under a lens, often perfectly smooth on both sides, but sometimes a little pubescent on the margins and the veins. Heads numerous, about one-third of an inch in diameter. Bracts pubescent, with the margin villous-ciliate, strongly acuminate but scarcely awned. Corolla hairy, white or pale rose-color, spotted; the middle segment of the lower lip oblong and somewhat incurved. Stamens usually included.

Moist thickets; common. Latter part of July – August. *P. verticillatum*, Pers. (Brachystemum verticillatum, *Michx.*) is regarded by Bentham as a variety of this species, but it differs much from the plant described above. Neither Dr. Gray nor I have seen it, except in the herbarium of Michaux.

6. PYCNANTHEMUM LINIFOLIUM, *Pursh.* *Narrow leaved Virginian Thyme.*

Stem smooth; leaves narrowly linear, rigid, entire; bracts ovate-lanceolate, somewhat awned; teeth of the calyx lanceolate-subulate. — *Pursh, fl.* 2. *p.* 409; *Nutt. gen.* 2. *p.* 33; *Ell. sk.* 2. *p.* 32; *Torr. compend. p.* 234; *Beck, bot. p.* 273; *Benth. Lab. p.* 330; *Gray, l. c.* Thymus Virginicus, *Linn. syst. p.* 453 (fide *Benth.*). Brachystemum linifolium, *Willd. enum. p.* 623.

Stem 1 – 2 feet high, much branched in a fastigiate manner. Leaves crowded, about an inch long and 1 – 2 lines wide, 3 – 5-nerved, acute, sprinkled with brownish dots. Heads very numerous, about one-third of an inch in diameter, hemispherical; the flowers much crowded. Bracts closely imbricated; the midrib produced into a cusp or short awn. Corolla pubescent, white spotted with purple: upper lip notched. Stamens usually a little exserted, but sometimes shorter than the corolla.

Moist thickets and exsiccated swamps. July – August; beginning to flower about two weeks earlier than the preceding species.

7. ORIGANUM. *Linn.; Benth. Lab. p.* 334. *WILD MARJORAM.*

[From the Greek, *oros*, a mountain, and *ganos*, joy; because many of the species are fragrant and handsome, and abound in hilly places.]

Calyx ovate-tubular, villous in the throat, 5-toothed; the teeth equal or nearly so. Corolla somewhat 2-lipped: the upper lip somewhat erect, emarginate; the lower spreading, almost equally 3-cleft. Stamens 4; the lower pair somewhat longer. — Herbs, with entire or somewhat toothed leaves, and flowers in cylindrical or oblong spikes which are rather loosely imbricated with mostly colored bracts.

1. ORIGANUM VULGARE, *Linn.* *Common Wild Marjoram.*

Erect, villous; leaves petiolate, broadly ovate, obtuse, broad and rounded at the base, green on both sides, obscurely toothed; spikes roundish, glomerate, corymbose-paniculate; bracts ovate, obtuse, colored, longer than the calyx. — *Linn. sp.* 2. *p.* 590; *Engl. bot. t.* 1143; *Pursh, fl.* 2. *p.* 135; *Torr. compend. p.* 236; *Beck, bot. p.* 274; *Darlingt. fl. Cest. p.* 346; *Benth. Lab. p.* 335.

Root perennial, creeping. Stem about a foot high, corymbosely branched at the summit, usually of a purplish color. Leaves an inch long, with several indistinct serratures on each side; the petiole 3 – 5 lines long. Panicles terminal and in the axils of the uppermost leaves, composed of numerous small closely aggregated heads or spikes. Bracts variable in length, but usually a little longer than the calyxes, tinged with purple. Calyx pubescent, with a dense tuft of white hairs in the throat. Corolla pale purple, pubescent. Stamens and style exserted.

Rocky banks and thickets; common on the Hudson as high as Troy; not frequent in the

western counties. Probably introduced. June – October. This plant is aromatic and rather ornamental. It yields an acrid essential oil that is sometimes employed for curing toothache. The leaves are used as a tea ; and also for dyeing woollen and linen of a brown and purple color.

8. COLLINSONIA. *Linn.; Benth Lab. p.* 357. *HORSE BALM.*

[Named in honor of Peter Collinson of London, a distinguished patron of Botany.]

Calyx ovate, 2-lipped ; the upper lip nearly plane, 3-toothed ; lower 2-toothed. Corolla somewhat campanulate ; the throat large and open, somewhat 2-lipped ; the lower lobe declined, longer than the others, and lacerately fimbriate or toothed. Stamens 2 or rarely 4, spreading, much exserted : anthers 2-celled ; the cells divaricate. — Herbs of a heavy odor, with large leaves, and flowers in panicles or sometimes simple racemes.

1. COLLINSONIA CANADENSIS, *Linn.* *Common Horse-balm. Knot-root.*

Stem nearly smooth ; leaves ovate, acuminate, coarsely serrate ; flowers numerous, in a terminal loose panicle, diandrous. — *Linn. sp.* 1. *p.* 28 ; *Michx. fl.* 1. *p.* 17 ; *Pursh, fl.* 1. *p.* 20 ; *Ell. sk.* 1. *p.* 34 ; *Torr. fl.* 1. *p.* 29 ; *Bigel. fl. Bost. p.* 10 ; *Beck, bot. p.* 275 ; *Darlingt. fl. Cest. p.* 349 ; *Benth. Lab. p.* 358. C. ovata, *Pursh, l. c.* fide *Benth. ; Ell. sk. l. c.*

Perennial. Stem 2 – 3 feet high, somewhat branching, obtusely 4-angled, often more or less pubescent at the summit. Leaves opposite, 3 – 8 inches long and 3 – 4 broad, thin, cordate or sometimes obtusely cuneate at the base ; the lower ones on long petioles ; uppermost on short petioles, or sessile. Racemes of flowers disposed in a large panicle ; the branches and pedicels opposite. Bracts shorter than the pedicels. Calyx smoothish ; teeth of the upper lip shorter than those of the lower. Corolla greenish yellow, half an inch or more in length ; the lower lip beautifully fringed.

Woods, in rich soil ; common. July – August. The flowers have a strong odor of limes. The root is sold by the Shakers under the name of *Stone-root,* and an infusion of it is reputed to possess diuretic and tonic powers.

9. CUNILA. *Linn.; Benth. Lab. p.* 360. *DITTANY.*

[An ancient Roman name, applied by Linnæus to this genus.]

Calyx ovate-tubular, equally 5-toothed, villous in the throat. Corolla 2-lipped : upper lip erect, flattish, often emarginate ; the lower spreading, 3-lobed ; the lobes nearly equal and entire, or the middle one larger and emarginate. Stamens 2, erect, exserted, distant ; the cells parallel, or at length divaricate. — Herbs or shrubby plants. Cymules loose, few- or many-flowered, usually axillary, sometimes capitate or spiked.

1. CUNILA MARIANA, *Linn.* (Plate LXXVI.) *Common Dittany.*

Herbaceous; leaves ovate, acute, sessile, rounded or cordate at the base; cymules axillary and terminal, pedunculate, loosely corymbose.—*Linn. sp.* (ed. 2.) 1. *p.* 30; *Michx. fl.* 1. *p* 13; *Pursh, fl.* 2. *p.* 406; *Ell. sk.* 1. *p.* 27; *Bart. veg. mat. med. t.* 42; *Torr. fl.* 1. *p.* 22; *Beck, bot. p.* 277; *Darlingt. fl. Cest. p.* 351; *Benth. Lab. p.* 360. Satureja origanoides, *Linn. sp. ed.* 1. *p.* 568. Ziziphora Mariana, *Rœm. & Schult. syst.* 1. *p.* 208.

Perennial. Stems 8 – 12 inches high (often several together), with numerous opposite spreading branches, nearly smooth, purplish. Leaves about an inch long, dotted with little glands; some of the dots larger and brownish; others (more numerous) minute and pellucid. Flowers in numerous fasciculate cymules in the upper part and extremity of the branches. Calyx strongly 10-striate, smooth externally, sprinkled with resinous dots; teeth lanceolate, acute: throat closed with copious white hairs. Corolla rose-colored, pubescent; middle lobe of the lower lip longer than the others.

Dry hilly places; southern part of the State. July – September. A popular remedy in fevers and colds, being an aromatic diaphoretic.

TRIBE IV. *MELISSINEÆ. Benth.*

Calyx 13- *or rarely* 10-*nerved*, 2-*lipped: upper lip* 3-*toothed; lower* 2-*cleft. Corolla* 2-*lipped: upper lip straight, entire, flattish, emarginate or slightly bifid; lower spreading,* 3-*lobed; the lobes flat; middle one often broader. Stamens* 4, *or sometimes only* 2, *ascending.*

10. HEDEOMA. *Pers. syn.* 2. *p.* 134; *Benth. Lab. p.* 365. *PENNYROYAL.*

[From the Greek, *hedus*, sweet, and *osme*, odor; some of the species being fragrant.]

Calyx ovoid-tubular, gibbous on the underside near the base, 2-lipped: upper lip 3-toothed; the lower 2-cleft. Corolla 2-lipped: upper lip erect, flat; the lower spreading, of 3 equal lobes. Fertile stamens 2, ascending, about as long as the corolla: cells of the anther diverging: sterile stamens rudimentary or wanting.—Herbs or suffruticose plants. Cymules axillary, loose, few-flowered. Flowers small.

1. HEDEOMA PULEGIOIDES, *Pers.* *Pennyroyal.*

Annual; stem erect, branching, pubescent; leaves oblong-ovate, somewhat serrate, petiolate, narrowed at the base; whorls few-flowered; upper lip of the calyx of three ovate-lanceolate teeth; corolla about as long as the calyx. — *Pers. l. c.; Pursh, fl.* 2. *p.* 414; *Ell. sk.* 1. *p.* 28; *Nutt. gen.* 1. *p.* 16; *Torr. fl.* 1. *p.* 24; *Beck, bot. p.* 280; *Darlingt. fl. Cest. p.* 350; *Benth. Lab. p.* 366. Melissa pulegioides, *Linn. sp.* 2. *p.* 593. Cunila pulegioides, *Linn. sp.* (ed. 2.) 1. *p.* 30; *Michx. fl.* 1. *p.* 13; *Bigel. fl. Bost. p.* 10; *Bart. veg. mat. med. t.* 41. Ziziphora pulegioides, *Rœm. & Schult. syst.* 1. *p.* 209.

Stem 6 – 12 inches high, retrorsely pubescent, obtusely 4-angled, branching above. Leaves half an inch to an inch long, rather obtuse, abruptly narrowed at the base into a petiole, sparingly toothed, dotted. Flowers about three in a cymule, on short pubescent pedicels. Calyx hairy below, glandularly dotted, distinctly gibbous at the base; the upper teeth smooth; the lower subulate and strongly ciliate: throat slightly villous. Corolla pale blue, pubescent: upper lip slightly emarginate; lobes of the lower lip equal and entire. Fertile stamens scarcely exserted; the sterile (upper) pair distinct, with small capitate abortive anthers. Style very unequally 2-lobed at the summit.

Dry hills, open barren woods, and road-sides; common. July – August. This plant is well known for its strong aromatic smell and warm pungent taste, resembling the *Mentha pulegium* of Europe. It is extensively employed as an aromatic stimulant, diaphoretic and emmenagogue. An essential oil is extracted from it, which is kept in all the apothecaries' shops. (See *Wood & Bache, U. S. Dispens. p.* 344.)

11. MICROMERIA. *Benth Lab. p.* 368. *MICROMERIA.*

[From the Greek, *micros*, small, and *meris*, a part.]

Calyx tubular, almost equally 5-toothed, or somewhat 2-lipped; the throat usually villous. Corolla 2-lipped; the upper lip erect, flattish, entire or emarginate; the lower spreading: the lobes flat and nearly equal, or the middle one broader. Stamens 4, all fertile, didynamous; the lower pair longer and ascending.—Suffrutescent or herbaceous plants. Cymules axillary or spiked, rarely many-flowered and panicled. Flowers usually small, purplish or white.

1. MICROMERIA GLABELLA, *Benth.* var. *angustifolia.* *Niagara Thyme.*

Smooth; stem herbaceous, erect, with prostrate stolons at the base; leaves sessile, those of the stem oblong-linear, obtuse, entire, of the stolons ovate (small), petiolate; cymules 1 – 3 – 5-flowered, the pedicels elongated, naked; calyx obscurely 2-lipped, the teeth subulate. — M. glabella, *Benth. Lab. p.* 371, excl. syn. *Michx. & Pers.; Hook. fl. Bor-Am.* 2. *p.* 114. Hedeoma glabra, *Nutt. gen.* 1. *p.* 16, not of *Pers.* Cunila glabra, *Torr. fl.* 1. *p.* 23, not of *Michx*; *Beck, bot. p.* 277.

Root creeping. Stems 4 – 8 inches high, branching below, throwing out long slender suckers from the base, often purplish. Leaves of the stems 5 – 8 lines long and 1 – 2 lines broad, narrowed at the base, dotted; the veins indistinct: leaves of the stolons 3 – 4 lines long, abruptly narrowed at the base into a petiole, often purplish underneath. Upper flowers all solitary; the lower ones in 3- (rarely 5-) flowered cymules: pedicels filiform. Calyx 13-nerved; the teeth all lanceolate-subulate, nearly equal: throat closed with dense white hairs. Corolla pale violet, twice as long as the calyx: upper lip entire; lower with the middle

lobe longest. Stamens all fertile ; the lower pair slightly exserted , the upper shorter : anther-cells oblong, at length widely divaricate. Style almost equally 2-cleft at the summit.

On calcareous rocks, about the Falls of Niagara ; Goat Island, and on Table Rock. August. The *Cunila glabella* of Michaux, which occurs on rocks in Tennessee, differs from the Niagara plant in being much larger ; the leaves all ovate- or obovate-oblong, and toothed. I should have described the latter as a distinct species, had I not received some Ohio specimens, collected by Mr. Sullivant, which connect the two forms.

12. MELISSA. *Linn.* (in part) ; *Benth. Lab. p.* 383. *BALM.*

[From the Greek, *melissa*, a bee ; because its flowers are much sought after by that insect.]

Calyx tubular, 13-nerved, 2-lipped : upper lip mostly spreading, 3-toothed ; the lower 2-cleft. Corolla 2-lipped : upper lip erect, flattish ; lower lip spreading, 3-lobed ; the middle lobe mostly broader. Stamens 4, ascending, mostly approximated in pairs at the summit : cells of the anther at first parallel, finally divaricate. — Herbs or undershrubs. Inflorescence various.

* CLINOPODIUM, Benth. *Cymules many-flowered or loosely few flowered, nearly sessile : bracts subulate : calyx naked in the throat, or slightly villous.*

1. MELISSA CLINOPODIUM, *Benth.* *Wild Basil. Field Thyme.*

Herbaceous, erect, villous ; leaves petiolate, ovate, rather obtuse, slightly repand-denticulate ; cymules clustered in many-flowered, globose, axillary and terminal heads ; bracts subulate, as long as the calyx.—*Benth. l. c. ; Darlingt. fl. Cest. p.* 351. Clinopodium vulgare, *Linn. sp. 2. p.* 587 ; *Engl. bot. t.* 1401 ; *Pursh, fl. 2. p.* 410 ; *Bigel. fl. Bost. p.* 239 ; *Beck, bot. p.* 281.

Stem 1 – 1½ foot high, sparingly branched or simple, clothed with a hoary pubescence. Leaves 1 – 2 inches long, pale green, hairy on both sides. Flowers in 2 – 3 roundish heads which are about an inch in diameter, and composed of crowded clusters. Bracts and calyx almost hispid with whitish spreading hairs. Corolla pale purple or rose-color.

Borders of woods, old fields, etc. ; frequent. A naturalized plant of European origin. July – August.

** MELIPHYLLUM, Benth. *Corolla's tube decurved, second lobe's four, nearly ovate: calyx gibbous at the base; the upper lip scarcely cleft; the lower one cleft to slightly below the middle.*

2. MELISSA OFFICINALIS, *Linn.* *Common Balm.*

Herbaceous, erect; leaves oblong-ovate, coarsely crenate-serrate, rugous, the lower ones often obtuse at the base; cymules axillary, loose, secund; bracts few, lanceolate-ovate, petiolate.—*Linn. sp.* 2. *p.* 592; *Beck, bot. p.* 280; *Darlingt. fl. Cest. p.* 351; *Benth. Lab. p.* 393.

Perennial. Stem 1 – 2 feet high, branching, a little pubescent. Leaves 2 inches or more in length and 1 – 2 inches broad, petiolate; the upper ones obtusely cuneate at the base. Flowers in small slightly peduncled axillary cymules. Bracts resembling the leaves, only much smaller, ciliate. Calyx tubular-campanulate; the upper lip truncate, with three short acute teeth: lower lip rather longer than the upper; the teeth with subulate points: the throat open. Corolla white or cream-colored.

Road-sides and borders of woods; rare. An European plant, naturalized in a few places. July – August. *Common Balm* is often cultivated in gardens, and an infusion of it is used as a grateful drink in fevers. The fresh plant has the odor of lemons, which is lost in drying.

TRIBE V. *SCUTELLARINEÆ. Benth.*

Calyx 2-lipped; the upper lip truncate, entire or somewhat 3-toothed. Corolla 2-lipped; the upper lip vaulted: tube ascending, exserted. Stamens 4, ascending beneath the upper lip of the corolla; the lower pair longer.

13. PRUNELLA. *Linn.; Benth. Lab. p.* 416. *SELF-HEAL.*

BRUNELLA, *Ray; Juss.*

[Altered by Linnæus from *Brunella* of older authors, which again is derived from the German word *Bräune*, signifying quinsy, which the plant was supposed to cure.]

Calyx tubular-campanulate, 2-lipped; the upper lip flat, dilated, truncate, with 3 short teeth; lower lip 2-cleft. Corolla 2-lipped; the upper lip erect, vaulted; lower depending, 3-lobed: the tube annulate within near the base. Stamens 4: filaments with 2 teeth at the extremity, the lower one bearing the anther. — Herbaceous plants, with the flowers in dense spikes. Floral leaves bract-like, roundish, imbricated.

1. PRUNELLA VULGARIS, *Linn.* *Common Self-heal. Healall.*

Leaves ovate-oblong or ovate-lanceolate, crenately toothed or nearly entire, sometimes incisely toothed, petiolate. — *Linn. sp.* 2. *p.* 600; *Engl. bot. t.* 961; *Michx. fl.* 2. *p.* 11; *Pursh, fl.* 2. *p.* 412; *Ell. sk.* 2. *p.* 88; *Bigel. fl. Bost. p.* 240; *Torr. compend. p.* 236; *Beck, bot. p.* 281; *Darlingt. fl. Cest. p.* 352; *Benth. Lab. p.* 417. P. ovata, *Pers. syn.* 2.

p. 137. P. Pennsylvanica, *Willd. hort. Berol. p.* 9. *t.* 9; *Pursh, l. c.*; *Bart. fl. Am. sept. t.* 60.

Perennial. Stem erect, ascending or decumbent, often branching at the base, 8 – 12 inches high; the upper part pubescent. Leaves dull green, variable in breadth; the nerves and petioles a little hairy. Spikes ovate or oblong-cylindrical, thick, terminal. Bracts mostly reniform, with a short abrupt point, ciliate, often purplish. Calyx large, closed in fruit; the upper lip broad, with 3 short points: teeth of the lower lip lanceolate, pointed. Corolla violet, sometimes pale: middle lobe of the lower lip finely toothed. Anthers approximated by pairs beneath the upper lip.

Woods, road-sides, etc.; very common. July – September. A variable plant, and divided into many species by some European botanists. It seems to be an introduced plant in the United States, but it has been found in nearly all parts of the world.

14. SCUTELLARIA. *Linn.; Benth. Lab. p.* 419. *SCULLCAP.*

[From the Latin, *scutella*, a little disk or cup; from the appearance of the calyx.]

Calyx campanulate, 2-lipped; the lips entire; upper one with a galeate appendage on the back, deciduous. Corolla 2-lipped; the tube elongated: upper lip vaulted; lower one dilated, convex. Stamens 4, ascending. — Herbs, with the flowers in terminal or axillary spikes or racemes, sometimes axillary and solitary.

* *Flowers terminal, racemose.*

1. SCUTELLARIA PILOSA, *Michx.* (Plate LXXVII.) *Hairy Scullcap.*

Stem erect, mostly simple, hairy-pubescent; leaves rhombic-ovate, crenate-serrate, petiolate, lowest ones truncate or cordate at the base; raceme terminal, loose, somewhat branched; bracts elliptical-ovate; calyx hairy.— *Michx. fl.* 2. *p.* 11; *Pursh, fl.* 2. *p.* 413; *Ell. sk.* 2. *p.* 91; *Beck, bot. p.* 282; *Darlingt. fl. Cest. p.* 352; *Benth. Lab. p.* 434. S. ovalifolia, *Torr. compend. p.* 237, not of *Pers.?*

Perennial. Stem 12 – 18 inches high, acutely 4-angled. Leaves 3 – 4 distant pairs, 1 – 2 inches long and an inch or more wide, abruptly tapering into a petiole at the base, naked in the axils; the lowest pair smaller and broader in proportion, usually more or less cordate at the base, sprinkled with appressed hairs above; the under surface (particularly on the veins) slightly pubescent and marked with impressed dots. Flowers in a loose somewhat paniculate terminal raceme. Pedicels 1 – 2 lines long. Corolla 6 – 8 lines long, pubescent, purplish blue above; the tube pale or nearly white.

Open woods and thickets, in the southern part of the State, and on Long Island and Staten Island. June – July.

2. SCUTELLARIA INTEGRIFOLIA, *Linn.* (Pl. lxxviii.) *Entire-leaved Scullcap.*

Stem erect, nearly simple, densely and minutely pubescent; upper leaves oblong-lanceolate or linear-lanceolate, tapering into short petioles, entire, rather obtuse; lowest ones ovate-oblong, distinctly petiolate, obtuse at the base; racemes paniculate, terminal, loose, leafy; bracts lanceolate; calyx pubescent. — *Linn. sp.* 2. *p.* 599; *Michx. fl.* 2. *p.* 12; *Ell. sk.* 2. *p.* 88; *Torr. compend. p.* 237; *Beck, bot. p.* 282; *Darlingt. fl. Cest. p.* 353; *Benth. Lab. p.* 435. S. hyssopifolia, *Linn. l. c.; Bart. fl. Am. sept. t.* 2; *Torr. l. c.; Beck, l. c.* S. Caroliniana, *Lam. dict.* 7. *p.* 706; *Pursh, l. c.; Ell. l. c.*

Perennial. Stem 1 – 2 feet high. Leaves 1 – 2 inches long and 3 – 6 lines wide, finely sprinkled with resinous dots, sometimes obscurely and repandly toothed; axils of the upper ones leafy. Racemes few-flowered; the bracts longer than the pedicels, leaf-like. Corolla an inch in length, bright purplish blue.

Open woods and borders of moist thickets; near New-York, and on Long Island. June – July. A very ornamental species. The whole plant is bitter.

** *Flowers axillary, either in leafy racemes or solitary.*

3. SCUTELLARIA PARVULA, *Michx.* *Small Scullcap.*

Stems assurgent or somewhat decumbent, branching from the base, smooth or minutely pubescent; leaves ovate or lanceolate-ovate, sessile or nearly so, somewhat cordate at the base, mostly entire, prominently veined; flowers axillary, solitary. — *Michx. fl.* 2. *p.* 11; *Pursh, fl.* 2. *p.* 412; *Hook. exot. fl.* 2. *t.* 106; *Benth. Lab. p.* 440; *Darlingt. fl. Cest. p.* 353; *Eat. man.* (ed. 8.) *p.* 420. S. ambigua, *Nutt. gen.* 2. *p.* 37; *Beck, bot. p.* 282.

Root (or rather rhizoma) perennial, creeping, consisting of small tubers connected together in a moniliform manner, and throwing out fibres from the joints. Stem 3 – 8 inches long, sometimes simple, but usually branching from the root and spreading, often of a purple color, as is likewise the under surface of the leaves. Leaves 4 – 8 lines long, mostly obtuse, pubescent above and smooth underneath, rarely with a few remote teeth. Flowers about 3 lines long, opposite, on short pubescent pedicels. Calyx often purplish. Corolla violet.

Dry sterile places, particularly on hill-sides. Shores of Lake Ontario (*Dr. Gray*); near Buffalo (*Dr. Aikin*). May – June.

4. SCUTELLARIA NERVOSA, *Pursh.* *Nerved Scullcap.*

Stem erect or assurgent, mostly simple, slender and weak, nearly smooth; lower leaves roundish-cordate, petioled; middle ones broadly ovate, sessile, crenate-toothed; the upper ovate-lanceolate, entire; flowers axillary and solitary. — *Pursh, fl.* 2. *p.* 412; *Benth. Lab. p.* 441; *Darlingt. fl. Cest. p.* 354. S. teucrifolia, *Smith in Rees, cyclop.* 32. *no.* 15. S. gracilis, *Nutt. gen.* 2. *p.* 37; *Torr. compend. p.* 237; *Beck, bot. p.* 281.

Root perennial, fibrous. Stem 8 – 12 inches high, often with runners at the base, acutely angled. Leaves about an inch long, strongly nerved, thin, roughish on the margin. Pedicels opposite, in the axils of the upper leaves. Corolla pale blue, 4 – 6 lines long. Achenia somewhat tuberculate.

Moist thickets near Poughkeepsie (*Mr. J. Carey*). June.

5. SCUTELLARIA GALERICULATA, *Linn.* *Common Scullcap.*

Stem more or less divaricately branched; leaves ovate-lanceolate, on very short petioles, roundish and cordate at the base, acute, crenately toothed; flowers axillary, opposite, the pedicels about the length of the petioles. — *Linn. sp.* 2. *p.* 599; *Engl. bot. t.* 523; *Pursh, fl.* 2. *p.* 412; *Nutt. gen.* 2. *p.* 37; *Bigel. fl. Bost. p.* 240; *Torr. compend. p.* 236; *Beck, bot. p.* 281; *Benth. Lab. p.* 437; *Darlingt. fl. Cest. p.* 603.

Perennial. Stem 12 – 18 inches high, smooth or minutely pubescent, often nearly simple. Leaves 1½ – 2 inches long and 6 – 8 lines wide, either nearly smooth on both sides, or pubescent and paler underneath: petioles only one or two lines long. Flowers half an inch or more in length. Calyx pubescent. Corolla violet blue, downy.

Wet meadows and damp shady places; common in the western and northern parts of the State. A native also of Europe and Asia.

6. SCUTELLARIA LATERIFLORA, *Linn.* *Mad-dog Scullcap.*

Smooth; stem nearly erect, much branched; leaves ovate or oblong-ovate, acuminate, coarsely serrate, petiolate, rounded or somewhat cordate at the base; racemes axillary, leafy. —*Linn. sp.* 2. *p.* 598; *Michx. fl.* 2. *p.* 11; *Pursh, fl.* 2. *p.* 412; *Ell. sk.* 2. *p.* 92; *Bigel. fl. Bost. p.* 239; *Beck, bot. p.* 282; *Benth. Lab. p.* 444; *Darlingt. fl. Cest. p.* 354.

Root perennial, fibrous. Stem 1 – 2 feet high, smooth except on the angles, which are slightly pubescent, often of a purplish color. Leaves 2 – 3 inches long and an inch or more broad: petioles of the lower ones an inch in length; of the upper ones shorter. Racemes numerous, formed of opposite and somewhat one-sided flowers with small lanceolate leaves at the base; the pedicels short. Corolla about one-fourth of an inch long, violet-purple or sometimes pale, pubescent.

Wet meadows and borders of small streams; common. July – August. About twenty years ago this plant excited much attention from its supposed virtue in curing hydrophobia, but it is now quite neglected. (See a memoir by Dr. W. P. C. Barton in the *Philad. med. & phys. jour. vol.* 1.)

TRIBE VI. *NEPETEÆ. Benth.*

Calyx oblique or somewhat 2-lipped; the upper teeth larger. Corolla 2-lipped; the upper lip somewhat vaulted; lower one spreading: throat mostly inflated. Stamens four, didynamous; the upper pair longer.

15. LOPHANTHUS. *Benth. Lab. p.* 462. GIANT HYSSOP.

Species of Hyssopus, *Linn.* and older authors.

[From the Greek, *lophos*, a crest, and *anthos*, a flower; in allusion to the appearance of the flowers.]

Calyx campanulate-tubular, 15-nerved, oblique, 5-cleft; the upper segments longer. Corolla 2-lipped: upper lip somewhat erect, emarginately 2-cleft; lower lip 3-lobed; the middle lobe broader and crenate. Stamens diverging; the upper pair longer: cells of the anther at length somewhat diverging. — Herbs, with the flowers in terminal spikes, or in axillary pedunculate cymes.

1. LOPHANTHUS NEPETOIDES, *Benth.* *Yellow Giant Hyssop.*

Smooth; leaves ovate, rather acute, serrate-crenate, green on both sides, smooth or scarcely pubescent underneath; spikes cylindrical, interrupted at the base; teeth of the calyx ovate, rather obtuse. — *Benth. Lab. p.* 464; *Darlingt. fl. Cest. p.* 355. Hyssopus nepetoides, *Linn. sp.* 2. *p.* 569; "*Jacq. hort. Vind.* 1. *p.* 28. *t.* 69;" *Michx. fl.* 2. *p.* 1; *Pursh, fl.* 2. *p.* 406; *Nutt. gen.* 2. *p.* 27; *Bigel. fl. Bost. p.* 235; *Beck, bot. p.* 274.

Stem 4 – 6 feet high, branching; the angles acute and often almost winged, of a pale yellowish green color. Leaves 2 – 4 inches long and 1½ – 2½ wide, acuminate, serrate except towards the tip, very slightly and softly pubescent and sprinkled with resinous dots underneath; the base sometimes cordate, especially when the plant grows in the shade: petiole nearly smooth. Spikes 2 – 4 inches long, thick and compact; the bracts broadly ovate and acuminate, strongly veined and a little ciliate: lower whorls of flowers often separate from the rest of the spike. Calyx nearly smooth, green; the teeth lanceolate-oblong and usually rather obtuse, but sometimes acute. Corolla pale greenish yellow, about one-fourth longer than the calyx. Stamens and styles exserted; the latter equally 2-cleft at the summit. Achenia villous at the summit.

Borders of woods, in thickets, and along fences; rather frequent. July – August.

2. LOPHANTHUS SCROPHULARIÆFOLIUS, *Benth.* *Purple Giant Hyssop.*

Stem pubescent; leaves ovate, acute, serrate-crenate, green on both sides, smooth above, pubescent underneath; spikes cylindrical, interrupted at the base; teeth of the calyx lanceolate, acute.—*Benth. Lab. p.* 463; *Darlingt. fl. Cest. p.* 355. Hyssopus scrophulariæfolius, *Willd. sp.* 3. *p.* 48; *Pursh, fl.* 1. *p.* 406; *Ell. sk.* 2. *p.* 71; *Beck, bot. p.* 274.

Stem 3 – 5 feet high, stout, the angles obtuse with the sides concave, branched, more or less pubescent, usually of a purple color. Leaves 3 – 5 inches long and 2 – 3 inches wide, often cordate at the base, coarsely serrate, acuminate; the petiole pubescent, an inch or more in length. Spikes 2 – 4 inches long, thick; the bracts broadly ovate and acuminate. Calyx tinged with purple; the segments oblong-lanceolate and usually acute. Corolla pale purple. Stamens and style exserted. Achenia villous at the summit.

Thickets and borders of woods; less frequent than the preceding. *Fl.* August. These two species are very nearly allied, and I have sometimes found specimens in which the characters of both were blended.

16. NEPETA. *Linn.; Benth. Lab. p* 464. *CATNEP.*

[Said by some to be named from *Nepi*, a town in Italy: others derive it from *nepa*, a scorpion; for the bite of which, one of the species was considered a cure.]

Calyx tubular or somewhat ovoid, 13 – 15-nerved, obliquely 5-toothed. Corolla 2-lipped: upper lip erect, somewhat concave, emarginate or 2-cleft; lower one spreading, 3-lobed; the middle lobe largest: tube slender below; the throat dilated. Stamens 4, ascending; the lower part longest: anthers mostly approximated by pairs; the cells diverging, at length divaricate. — Herbs of various habit.

1. NEPETA CATARIA, *Linn.* *Common Catnep*, or *Cat-mint.*

Hoary-pubescent; stem erect; leaves oblong-cordate, acute, crenate-serrate, rugose; whorls many-flowered, the lower ones pedunculate, upper ones crowded in a spike; bracts about as long as the pedicels; teeth of the calyx lanceolate-subulate; corolla one half longer than the calyx. — *Linn. sp.* 2. *p.* 570; *Engl. bot. t.* 137; *Michx. fl.* 2. *p.* 2; *Ell. sk.* 2. *p.* 72; *Pursh, fl.* 2. *p.* 406; *Bigel. fl. Bost. p.* 237; *Beck, bot. p.* 279; *Benth. Lab. p.* 477; *Darlingt. fl. Cest. p.* 356.

Perennial. Whole plant clothed with a soft whitish pubescence. Stem 2 – 3 feet high. Leaves 2 – 3 inches long, petiolate. Whorls somewhat globose; the lower ones on short peduncles; upper ones in a compound interrupted spike. Calyx tubular, pubescent. Corolla whitish or cream-colored; the middle lobe of the lower lip crenate and speckled with purple.

Old fields, along fences, and cultivated grounds; introduced from Europe. June – August. Every one is familiar with this plant, and its uses as a domestic medicine.

2. NEPETA GLECHOMA, *Benth.* *Ground Ivy. Gill.*

Stem procumbent, rooting at the base; leaves reniform-cordate, crenate; whorls axillary, few-flowered; corolla three times as long as the calyx. — *Benth. Lab. p.* 485; *Darlingt. fl. Cest. p.* 356. Glechoma hederacea, *Linn. sp.* 2. *p.* 578; *Engl. bot. t.* 583; *Pursh, fl.* 2. *p.* 408; *Bigel. fl. Bost. p.* 234; *Beck, bot. p.* 280.

Perennial. Stems 6 – 12 inches long, smooth; the branches ascending. Leaves broader than wide, on long petioles, green and a little hairy on both sides. Whorls distant; the pedicels short. Calyx tubular; the teeth lanceolate, with a subulate point. Corolla bright blue, about half an inch long; the lobes rounded.

Road-sides, door-yards, and along fences: introduced from Europe. May – June.

17. DRACOCEPHALUM. *Linn.* (in part); *Benth. Lab. p.* 490. *DRAGON'S-HEAD.*

[From *drakon*, a dragon, and *kephalē*, a head; in allusion to the flowers.]

Calyx tubular, 5-toothed: upper tooth broader and often largest; the three upper sometimes approximated. Corolla 2-lipped: upper lip erect, somewhat concave, emarginate; the lower spreading, 3-lobed; middle lobe slightly 2-cleft: throat dilated. Stames 4; the lower pair shorter: anthers approximated by pairs; the cells divaricate. — Perennial or biennial herbs. Whorls many-flowered, axillary or aggregated in a terminal spike. Bracts mostly leafy, with bristle-pointed teeth.

1. DRACOCEPHALUM PARVIFLORUM, *Nutt.* *Small-flowered Dragon's-head.*

Stem erect, somewhat branched; leaves ovate-lanceolate, coarsely or incisely mucronate-serrate, petiolate, green on both sides; whorls in a terminal capitate spike; upper tooth of the calyx much broader than the others; corolla scarcely longer than the calyx. — *Nutt. gen.* 2. *p.* 35; *Benth. Lab. p.* 496; *Hook. fl. Bor.-Am.* 2. *p.* 115.

Biennial. Whole plant nearly smooth. Stem 8 – 15 inches high, rather stout, obtusely 4-angled. Leaves $1\frac{1}{2}$ – 3 inches long, obtuse at the base or somewhat cuneate, acute; the serratures deep and very acute: petiole half an inch to an inch or more in length. Spikes globose or ovoid, about an inch in diameter; the exterior floral leaves sessile, acute, with subulate serratures. Bracts strongly veined, and fringed with rigid bristles. Calyx hairy, 15-nerved: teeth mucronate; upper one ovate; the others lanceolate and shorter. Corolla 4 – 5 lines long, pale blue; the tube slender: upper lip emarginate; middle lobe of the lower lip much the largest, and emarginate. Achenia large, black, smooth.

Barren fields and woods, Watertown, Jefferson county (*Dr. Gray*). Rocky banks of small lakes and rivers, St. Lawrence county. May – August. This plant occurs also in various parts of British America; and on the Upper Missouri, where it was discovered by Mr. Nuttall.

TRIBE VII. *STACHYDEÆ. Benth.*

Calyx irregularly veined or 5 – 10-*nerved, equal or rarely somewhat* 2-*lipped,* 3 – 10-*toothed. Corolla* 2-*lipped : upper lip galeate or arched, entire or emarginate ; the lower variously* 3-*lobed. Stamens* 4, *ascending : upper pair shorter.*

CONSPECTUS OF THE GENERA.

18. PHYSOSTEGIA. Calyx obscurely veined, 5-toothed, at length inflated-campanulate. Corolla with a long exserted tube ; the throat dilated.

19. LAMIUM. Calyx 5-nerved : teeth 5, not spiny. Upper lip of the corolla vaulted or galeate. Stamens longer than the tube. Achenia acutely 3-angled, truncate.

20. LEONURUS. Calyx 5-nerved, with five rigid somewhat spiny teeth. Upper lip of the corolla flattish or vaulted. Achenia sharply 3-angled, truncate.

21. GALEOPSIS. Calyx 5-nerved, with five mucronate teeth. Upper lip of the corolla arched : throat inflated. Anther-cells opening transversely by two valves.

22. STACHYS. Calyx mostly 10-nerved, 5-toothed. Corolla with the throat scarcely dilated : upper lip arched. Stamens longer than the tube.

23. MARRUBIUM. Calyx tubular, 10-nerved, with 5 or 10 spreading teeth. Corolla with the tube longer than the calyx ; the upper lip straight, narrow, 2-cleft. Stamens included.

18. PHYSOSTEGIA. *Benth. Lab. p.* 504. *PHYSOSTEGIA.*

[From the Greek, *physa*, a bladder, and *stege*, a covering ; the calyx becoming inflated.]

Calyx obscurely 10-veined, 5-toothed or truncate and obscurely toothed, finally inflated-campanulate. Corolla 2-lipped ; the tube much longer than the calyx, destitute of a ring within ; the throat inflated : upper lip nearly erect, somewhat concave, entire or emarginate ; the lower spreading, with 3 rounded lobes, of which the middle one is larger and emarginate. Stamens ascending under the upper lip ; the lower pair rather longer : anthers parallel, 2-celled ; the cells distinct. — Erect perennial herbs with lanceolate leaves, and the flowers in a simple or compound terminal spike. Corolla large, purple.

1. PHYSOSTEGIA VIRGINIANA, *Benth.* *Dragon's-head.*

Calyx acutely 5-toothed. — *Benth. l. c.; Darlingt. fl. Cest. p.* 603. Dracocephalum Virginianum, *Linn. sp.* 2. *p.* 594 ; *Michx. fl.* 2. *p.* 10 ; *Bot. mag. t.* 467 ; *Pursh, fl.* 2. *p.* 411 ; *Ell. sk.* 2. *p.* 84 ; *Torr. compend. p.* 236 ; *Beck, bot. p.* 278. D. denticulatum, *Ait. Kew. ed.* 2. *p.* 317 ; *Bot. mag. t.* 214 ; *Pursh, l. c.; Ell. l. c.; Beck, l. c.* Prasium purpureum, *Walt. fl. Car. p.* 166.

Stem about 2 feet high, smooth, simple or sparingly branched. Leaves 2 – 3 inches long and 4 – 8 lines wide, narrowly lanceolate, sessile, smooth, remotely and mucronately serrate. Spikes leafless, 4 – 8 inches long ; the flowers mostly opposite and nearly sessile. Bracts shorter than the calyx, ovate, acuminate. Calyx at first tubular-campanulate, but inflated after flowering, pubescent, tinged with purple ; the teeth nearly equal. Corolla about three-

fourths of an inch long, pale purple or sometimes variegated ; the tube much dilated : upper lip nearly entire ; lobes of the lower lip slightly emarginate. Stamens a little longer than the tube of the corolla ; anther-cells distinct ; the margins spinulose-denticulate toward the base. Achenia with a small abrupt point.

19. LAMIUM. *Linn.; Benth. Lab. p.* 507. *DEAD-NETTLE.*

[Named from the Greek, *laimos*, the throat ; on account of the shape of the flower.]

Calyx tubular-campanulate, about 5-nerved ; the mouth equal, or often oblique, with 5 nearly equal subulately pointed teeth. Corolla 2-lipped : upper lip ovate or oblong, galeate or arched, usually narrowed at the base ; the throat dilated : lateral lobes at the margin of the throat truncate or rarely oblong, sometimes with a tooth-like process ; middle lobe broad and emarginate, contracted at the base and somewhat stipitate. Stamens 4 ; the lower pair longer : anthers approximated by pairs. — Herbs (often annual), with the stems assurgent. Lower leaves on long petioles ; upper ones larger, and often cordate at the base, incisely toothed or crenate. Flowers in whorls ; the lower ones remote.

1. LAMIUM AMPLEXICAULE, *Linn.* *Common Dead-nettle. Hen-bit.*

Leaves orbicular, crenately incised , the lower ones petioled, upper ones clasping ; tube of the corolla naked within , the throat dilated ; upper lip oblong, entire ; anthers hairy.—*Linn. sp.* 2. *p.* 579 ; *Engl. bot. t.* 770 ; *Pursh, fl.* 2. *p.* 206 ; *Ell. sk.* 2. *p.* 73 ; *Bigel. fl. Bost. p.* 235 ; *Beck, bot. p.* 278 ; *Benth. Lab. p.* 511 ; *Darlingt. fl. Cest. p.* 357.

Annual. Stems much branching from the base, 6 – 10 inches high. Lower leaves about half an inch long, and of rather greater breadth ; the petioles usually longer than the lamina : floral leaves larger, closely sessile. Whorls many-flowered ; the upper ones approximated. Calyx hairy. Corolla nearly half an inch long, bright purple, pubescent ; the upper lip densely villous : throat and lower lip spotted.

Fields and cultivated grounds ; very common. Introduced from Europe. April – November.

20. LEONURUS. *Linn.; Benth. Lab. p.* 517. *MOTHERWORT.*

[From the Greek, *leon*, a lion, and *oura*, a tail ; from a fancied resemblance of the plant.]

Calyx turbinate, 5-nerved, with five nearly equal teeth, which are subulate, with somewhat spiny tips, and finally spreading. Corolla 2-lipped ; the upper lip oblong and entire, either flattish or vaulted ; lower lip spreading, 3-lobed : lateral lobes oblong ; middle one obcordate. Stamens ascending ; the lower pair longer. Anthers approximated by pairs.—Erect herbs, with incisely lobed leaves, and the flowers in dense whorls.

1. LEONURUS CARDIACA, *Linn.* *Common Motherwort.*

Lower stem-leaves palmately lobed; the upper ovate, lobed; floral ones 3-cleft, narrowed at the base; the lobes lanceolate; tube of the corolla with a villous ring inside; upper lip flattish; middle lobe of the lower lip entire.—*Linn. sp.* 2. *p.* 584; *Engl. bot. t.* 410; *Pursh, fl.* 2. *p.* 408; *Ell. sk.* 2 *p.* 77; *Bigel. fl. Bost. p.* 235; *Beck, bot. p.* 278; *Benth. Lab. p.* 518; *Darlingt. fl. Cest. p.* 358.

Perennial. Stem 2 – 3 feet high, branching; the angles pubescent. Leaves on long petioles, spreading or somewhat pendulous, dull green above, pale and pubescent underneath. Whorls numerous. Calyx with sharp rigid spreading teeth. Corolla small, reddish white; the upper lip pubescent.

Waste places and about walls; common. Introduced from Europe. July – August. Formerly a medicine of some repute, but now neglected.

21. MARRUBIUM. *Linn.; Benth. Lab. p.* 585. *HOREHOUND.*

[Supposed to have been named from a town in Italy.]

Calyx tubular, 5 – 10-nerved, with 5 – 10 nearly equal erect or finally spreading teeth. Corolla 2-lipped: upper lip erect, flattish or concave, entire or slightly 2-cleft; lower lip spreading, 3-lobed; the middle lobe broader, and often emarginate. Stamens 4; the lower pair longer, included within the tube of the corolla: anther-cells divaricate and somewhat confluent.—Perennial herbs, mostly woolly, with rugose and often incised leaves. Whorls many- or few-flowered.

1. MARRUBIUM VULGARE, *Linn.* *Common Horehound.*

Stem ascending, hoary-tomentose; leaves roundish-ovate, toothed-crenate; whorls many-flowered; calyx with 10 subulate recurved teeth. — *Linn. sp.* 2. *p.* 583; *Engl. bot. t.* 410; *Pursh, fl.* 2. *p.* 408; *Ell. sk.* 2. *p.* 76; *Beck, bot. p.* 280; *Benth. Lab. p.* 591; *Darlingt. fl. Cest. p.* 360.

Plant white and woolly. Stems numerous, 12 – 18 inches high. Leaves petiolate, very rugose, about two inches long, narrowed at the base. Flowers in distant compact whorls. Calyx 10-nerved. Corolla small, white, pubescent.

Stony banks of rivers, and about houses: introduced from Europe. July – August. A popular medicine, in very general use for colds, and as a mild tonic. It is now much employed as an ingredient of certain candies.

22. GALEOPSIS. *Linn.; Benth. Lab. p.* 522. *HEMP-NETTLE.*

[From the Greek, *galeos*, a weasel, and *opsis*, appearance; the flowers having some resemblance to the head of that animal.]

Calyx tubular-campanulate, about 5-nerved, 5-toothed; the teeth with spine-like tips, nearly equal, or the upper ones longer. Corolla 2-lipped; the throat dilated: upper lip ovate, entire, arched; the lower spreading, 3-lobed: lateral lobes ovate; lower one obcordate, or somewhat 2-cleft: the palate with two teeth on the upper side. Stamens 4, ascending; the lower pair longer: anther-cells opposite, transversely 2-valved; inner valve of each cell hispidly ciliate, the outer valve naked. — Annual herbs, with the whorls several- or many-flowered. Flowers red, yellowish or variegated.

1. GALEOPSIS TETRAHIT, *Linn.* *Common Hemp-nettle.*

Stem hispid, swollen below the joints; leaves ovate, hairy on the upper surface. — *Linn. sp.* 2. *p.* 579; *Benth. Lab. p.* 524.

var. 1. *parviflora*, Benth.: corolla $1\frac{1}{2}$ – 3 times the length of the calyx. *Benth. l. c.* G. Tetrahit, *Engl. bot. t.* 207; *Pursh, fl.* 2. *p.* 407; *Bigel. fl. Bost. p.* 236; *Torr. compend. p.* 234; *Beck, bot. p.* 277.

var. 2. *grandiflora*, Benth.: corolla 3 – 4 times as long as the calyx. *Benth. l. c.* G. versicolor, *Curt. fl. Lond.* 2. *ic.; Engl. bot. t.* 667. G. Ladanum, *Bigel. l. c.?*

Stem 1 – 2 feet high, covered with stiff retrorse hairs, more or less branching, erect; the branches thickened just below the joints. Leaves 2 – 4 inches long and 1 – 2 inches wide, thin, rather coarsely serrate, often unequal at the base, slightly pubescent underneath; the upper surface clothed with scattered appressed hairs: petiole an inch or more in length. Whorls approximated towards the summit of the stem and branches. Teeth of the calyx spreading, usually longer than the tube, hispid, and terminating in a long spinescent point. Corolla in var. 1. about twice the length of the calyx, purplish or sometimes pale; in var. 2. yellow with a large purple spot on the lower lip, more than twice as large as in the other variety.

Old fields, road-sides, etc.: the first variety very common north and west of Albany; the large-flowered form only in the northern counties. The latter is what I called (without sufficient examination) *G. Ladanum*, in my Catalogue of New-York plants in 1844.

23. STACHYS. *Linn.; Benth. Lab. p.* 525. *HEDGE-NETTLE.*

[So named from the Greek, *stachys*, a spike: in allusion to its mode of flowering.]

Calyx tubular-campanulate, 5 – 10-nerved, somewhat equally 5-toothed, or indistinctly 2-lipped. Corolla 2-lipped; the upper lip erect or somewhat spreading, often arched, entire

or emarginate : lower lip mostly longer, spreading, 3-lobed ; the middle lobe largest, entire or emarginate. Stamens 4, ascending ; the lower ones longer : anthers approximated by pairs.—Herbaceous or frutescent plants ; the whorls 2 – many-flowered, often in a terminal spike.

1. STACHYS ASPERA, *Michx.* *Rough Hedge-nettle.*

Stem retrorsely hispid ; leaves oblong-lanceolate, on short petioles, acute, often rounded at the base, serrate, smoothish or with scattered rigid hairs above, and naked except on the veins underneath ; whorls about 6-flowered ; teeth of the calyx divaricate and spine-like. — *Michx. fl. 2. p. 5* ; *Pursh, fl. 2. p. 407* ; *Bigel. fl. Bost. p. 236* ; *Torr. compend. p. 234* ; *Beck, bot. p. 279* ; *Benth. Lab. p. 543* ; *Darlingt. fl. Cest. p. 359.* S. hispida, *Pursh, l. c.*

Perennial. Stem about 2 feet high, sparingly branched, rather slender ; the angles usually very hispid with stiff hairs, which are spreading and partly reflexed ; the concave sides often smooth. Leaves 2 – 5 inches long, thin, more or less hispidulous above with appressed hairs ; the under surface smooth, except the few hairs that are sprinkled on the veins. Whorls rather approximated, and forming interrupted terminal leafy spikes 6 – 8 inches long, each whorl about 6- (but sometimes 8-) flowered. Calyx tubular-campanulate ; the teeth more than half the length of the (often smoothish) tube, hispid-ciliate. Corolla pale violet-purple, more or less pubescent externally, with a hairy ring in the tube. Achenia roundish-obovoid, brown, nearly smooth.

Wet thickets and borders of rivulets ; rather common. July – August. Nearly allied to *S. palustris.*

2. STACHYS PALUSTRIS, *Linn.* *Marsh Hedge-nettle.*

Herbaceous, erect ; stem pubescent, the angles with spreading or reversed hairs ; leaves somewhat sessile, oblong- or ovate-lanceolate, serrate-crenate, rounded or cordate at the base, rugose, hispid, or the lower ones smooth ; whorls 6 – 10-flowered, distinct, the uppermost somewhat approximated ; calyx campanulate, hispid, the teeth lanceolate, acute and rather spiny ; corolla twice as long as the calyx (*Benth.*).—*Linn. sp. 2. p. 580* ; *Engl. bot. t. 1675* ; *Benth. Lab. p. 543.* S. hispida, *Nutt. gen. 2. p. 30?* S. sylvatica, *Darlingt. fl. Cest. p. 360.*

Perennial. Stem 2 – 3 feet high, branching, sometimes nearly smooth except at the joints. Leaves 3 – 5 inches long and 1 – 2 inches wide, pubescent or smoothish, acute ; the petioles 3 – 6 lines long. Whorls numerous, mostly 6-flowered, forming a long terminal interrupted spike. Calyx rather sparingly hispid, 10-nerved ; the teeth divaricate and spinescent at the tip. Corolla purplish, more than twice as long as the calyx.

Borders of woods and river banks ; in the western part of the State. July – August. — This plant differs in several respects from my European specimens, and may be only a variety of *S. aspera.*

3. STACHYS HYSSOPIFOLIA, *Michx.* *Smooth Narrow-leaved Hedge-nettle.*

Herbaceous, very smooth; stem slender, ascending; leaves oblong-lanceolate or linear-lanceolate, sessile or nearly so, denticulate; whorls about 4-flowered, somewhat approximated in a terminal interrupted spike; calyx campanulate, very smooth, the teeth lanceolate, acute but scarcely spiny; corolla about twice as long as the calyx. — *Michx. fl.* 2. *p.* 4; *Pursh, fl.* 2. *p.* 407; *Ell. sk.* 2. *p.* 74; *Torr. compend. p.* 234; *Beck, bot. p.* 279; *Benth. Lab. p.* 534. S. tenuifolia, *Willd. sp.* 3. *p.* 100?

Root perennial, creeping. Stem 12 – 15 inches high, mostly simple; the nodes slightly hairy between the bases of the leaves. Leaves 1 – 1½ inch long and often not more than 2 lines wide, obtuse or rather acute, either obtuse or narrowed at the base, denticulate toward the summit; the base entire. Whorls seldom more than 4-flowered. Calyx obscurely nerved; the teeth often purplish. Corolla about as large as in the preceding species, violet-purple, slightly pubescent. Stamens longer than the throat of the corolla: anther-cells roundish, divaricate. Style equally 2-cleft at the summit. Achenia roundish-3-angled, nearly smooth.

Borders of salt-marshes, Long Island, particularly about Flushing and Bath. July – August.

Phlomis tuberosa, Linn. has been found by Prof. Dewey on the shore of Lake Ontario, near the mouth of Genesee river; but it can hardly yet be considered as a naturalized plant.

TRIBE VIII. *AJUGOIDEÆ. Benth.*

Corolla with the upper lip very short, sometimes cleft, with the segments depending, very rarely erect and vaulted: lower lip elongated. Stamens 2 or 4, ascending, exserted. Achenia more or less reticulated-rugose.

24. TRICHOSTEMA. *Linn.; Benth. Lab. p.* 658. *BLUE CURLS.*

[From the Greek, *thrix, trichos,* a hair, and *stema,* a stamen; the stamens being very long and hair-like.]

Calyx campanulate, oblique, unequally 5-cleft, resupinate by the twisting of the pedicel: the three lower (or true upper) teeth elongated; the other two very short. Corolla somewhat 2-lipped; the upper lip becoming the lower by resupination, falcate; the other linear-oblong, consisting of three united lobes. Stamens 4, much exserted and curved: anther-cells divaricate and at length confluent. Achenia rugose-pitted. — Herbs (mostly annual), with entire leaves and axillary or racemose flowers.

1. TRICHOSTEMA DICHOTOMA, *Linn.* *Blue Curls. False Pennyroyal.*

Pubescent and somewhat viscid; leaves lanceolate-oblong or rhombic-lanceolate, attenuated at the base into a short petiole.—*Linn. sp.* 2. *p.* 598; *Walt. fl. Car. p.* 164; *Michx. fl.* 2. *p.* 10; *Pursh, fl.* 2. *p.* 414; *Nutt. gen.* 2. *p.* 39; *Ell. sk.* 2. *p.* 94; *Bigel. fl. Bost. p.* 240; *Bart. fl. N. Am.* 3. *t.* 93; *Beck, bot. p.* 275; *Benth. Lab. p.* 658; *Darlingt. fl. Cest. p.* 361.

Annual. Stem 8 – 12 inhces or more in height, very obtusely 4-angled, often purplish, paniculately much branched. Leaves about an inch long and 3 – 5 lines wide. Pedicels in the axils of small bract-like leaves, 2 – 3 lines long, one-flowered, twisting about the time of the opening of the flower, which thus becomes inverted, 5-nerved : three of the teeth of the calyx united except towards the summit, acute but scarcely mucronate ; the other two much shorter, ovate. Corolla bright blue, or sometimes pale. Stamens half an inch or more in length, beautifully curved. Achenia large, conspicuously reticulated and pitted. Style equally 2-cleft at the summit.

Sandy fields ; common along the Hudson and on Long Island, but somewhat rare in the northern and western counties. July – September. The plant has a rather agreeable balsamic scent.

25. TEUCRIUM. *Linn.; Benth. Lab. p.* 660. *GERMANDER.*

[So named from *Teucer*, a prince of Troy ; because he is said to have first used the plant medicinally.]

Calyx tubular-campanulate, almost equally 5-toothed, or somewhat 2-lipped and the upper tooth broader. Corolla with the tube short ; the four upper lobes nearly equal, oblong and declined, or very short and nearly erect ; the lowest lobe largest, oblong, declined. Stamens exserted from a cleft between the two upper lobes of the corolla : cells of the anther confluent. Achenia rugose. — Herbs or shrubby plants of various inflorescence and habit.

1. TEUCRIUM CANADENSE, *Linn.* *Woodsage. Germander.*

Hoary-pubescent, erect ; leaves ovate-lanceolate, obtuse at the base, hoary underneath ; flowers in a simple terminal spike, the whorls about 6-flowered ; bracts subulate ; calyx campanulate, the three upper teeth much broader.— *Linn. sp.* 2. *p.* 564 ; *Michx. fl.* 2. *p.* 1 ; *Pursh, fl.* 2. *p.* 405 ; *Ell. sk.* 2. *p.* 69 ; *Bigel. fl. Bost. p.* 235 ; *Torr. compend. p.* 232 ; *Beck, bot. p.* 274 ; *Benth. Lab. p.* 672 ; *Darlingt. fl. Cest. p.* 362. T. Virginicum, *Linn. l. c.* ; "*Schk. hand. t.* 160 ;" *Pursh, l. c.* ; *Ell. l. c.* ; *Torr. l. c.* ; *Beck, l. c.*

Perennial. Stem about two feet high, mostly simple, 4-angled. Leaves 3 – 4 inches long, varying from nearly ovate to oblong-lanceolate, acute or acuminate, serrate, pale green above, soft and canescent underneath ; the petioles 2 – 4 lines long. Spikes solitary, or sometimes with two or more smaller ones at its base, 3 – 6 inches long ; the flowers often imperfectly whorled, on short pedicels. Calyx downy, sometimes purplish ; the uppermost tooth rather acute ; lateral ones obtuse ; the two lower acuminate. Corolla pale purple ; the upper lip apparently wanting, owing to a deep cleft between the two lobes : middle lobe of the lower lip remote from the others, and much larger, oblong and concave. Stamens ascending, curved, shorter than the corolla. Style equally 2-cleft at the extremity. Achenes obovoid and somewhat 3-sided, reticulated.

Low and rather shady grounds ; frequent. July.

ORDER LXXII. BORAGINACEÆ. *Juss.* THE BORAGE TRIBE.

Calyx of five leafy persistent equal sepals, which are more or less united at the base. Corolla regular, 5-lobed, often with a row of scales in the throat. Stamens 5, alternate with the lobes of the corolla. Ovary deeply 4-lobed; each division with a single suspended ovule: style single, proceeding from the base of the lobes of the ovary. Fruit consisting of four little nuts or achenia. Seeds with little or no albumen: cotyledons plano-convex. — Herbaceous or sometimes shrubby plants, with round stems and alternate usually rough leaves. Flowers often in one-sided racemes which are spirally revolute before expansion, mostly without bracts.

CONSPECTUS OF THE GENERA.

* *Nuts fixed to the receptacle.*

† Throat of the corolla naked.

1. ONOSMODIUM. Calyx deeply 5-parted. Corolla tubular-campanulate; the lobes acute, connivent. Style much exserted. Nuts ovoid, shining, not perforate at the base.
2. ECHIUM. Corolla irregular, somewhat campanulate; the limb obliquely 5-lobed. Nuts tuberculate, not perforate at the base, obliquely acuminate.
3. PULMONARIA. Calyx 5-parted, somewhat prismatic. Corolla (large) salver-funnelform. Nuts not perforate at the base, very smooth.
4. LITHOSPERMUM. Calyx 5-parted. Corolla (small) funnelform. Nuts not perforate at the base, very smooth or rarely rugose.
5. BATSCHIA. Calyx deeply 5-parted. Corolla (large) salverform; the limb nearly flat; the tube closed at the base by a bearded ring. Nuts not perforate at the base, smooth and shining.

†† Throat of the corolla more or less clothed with scales.

6. LYCOPSIS. Calyx 5-cleft. Corolla funnel-shaped, with a curved tube. Nuts concave at the base.
7. MYOSOTIS. Calyx 5-cleft. Corolla salver-shaped; the throat half closed with convex scales. Nuts perforated at the base.
8. SYMPHYTUM. Calyx 5-parted. Corolla cylindrical-campanulate; the throat closed with subulate scales. Nuts rugous, perforated at the base.

** *Nuts fixed to the style or central column.*

9. CYNOGLOSSUM. Calyx 5-parted. Corolla funnelform; the throat closed with convex scales. Nuts depressed, covered with rigid prickles.
10. ECHINOSPERMUM. Calyx 5-cleft. Corolla somewhat salverform; the throat closed with convex scales. Nuts compressed or angular, muricate on the margin.

1. ONOSMODIUM. *Michx. fl.* 1. *p.* 132; *Endl. gen.* 3755. *ONOSMODIUM.*

[So named from its resemblance to *Onosma*, another genus of this order.]

Calyx 5-parted. Corolla tubular-campanulate, naked in the throat; the lobes acute and connivent. Style much exserted. Nuts ovoid, shining, fixed by a flat base to the receptacle. — More or less hispid herbaceous plants, with the flowers in terminal leafy racemes.

1. ONOSMODIUM HISPIDUM, *Michx.* (Pl. LXXIX.) *False Gromwell.*

Whole plant hispid; leaves obovate-lanceolate, papillose-dotted; segments of the corolla lanceolate-subulate.—*Michx. fl.* 1. *p.* 132; *Pursh, fl.* 1. *p.* 132; *Ell. sk.* 1. *p.* 226; *Torr. fl.* 1. *p.* 204; *Beck, bot. p.* 252; *Darlingt. fl. Cest. p.* 119. Lithospermum Virginianum, *Linn. sp.* 1. *p.* 132; *Willd. sp.* 1. *p.* 752. Purshia hispida, *Spreng. in Lehm. Asperif. p.* 382.

Perennial. Stem 1 – 2 feet high, branching, rough. Leaves 2 – 3 inches long, varying from oblong-lanceolate to ovate-lanceolate, sessile, strongly nerved, clothed with short stiff hairs which proceed from minute warts or papillæ. Racemes at first recurved and nodding, finally erect. Calyx deeply 5-parted; the segments narrowly lanceolate, very hispid. Corolla pale greenish yellow, finally more than twice as long as the calyx, pubescent; the lobes hairy at the summit. Stamens included: filaments very short: anthers large, sagittate. Style nearly twice as long as the corolla: stigma small, simple. Nuts ovoid, gray, shining, marked with a few impressions, angular on the inside; one or more of them often abortive.

Borders of fields, and hill-sides. *Fl.* June – July. *Fr.* August.

2. ECHIUM. *Linn.; Endl. gen.* 3757. *VIPER'S BUGLOSS.*

[So named from *echis*, the Greek for viper; the seeds resembling the head of that animal.]

Calyx 5-parted; the segments subulate, erect. Corolla irregular, somewhat campanulate; the limb unequally 5-lobed: throat open: tube short. Stigma 2-cleft. Nuts tuberculate, not perforate at the base.—Herbaceous, or sometimes frutescent, more or less hispid plants. Flowers rather showy, in spikes which are at length recurved.

1. ECHIUM VULGARE, *Linn.* *Blue-weed. Viper's Bugloss. Blue Thistle.*

Stem herbaceous, mostly simple, hispid and tuberculose; leaves linear-lanceolate, hispid; flowers in short lateral spikes; stamens longer than the corolla.—*Linn. sp.* 1. *p.* 139; *Engl. bot. t.* 181; *Pursh, fl.* 1. *p.* 130; *Torr. fl.* 1. *p.* 205; *Bigel. fl. Bost. p.* 70; *Beck, bot. p.* 253; *Darlingt. fl. Cest. p.* 119.

Root biennial. Stem 1½ – 2½ feet long, erect or assurgent, covered with stiff hairs which stand on minute tubercles. Leaves 2 – 4 inches long, hispid; those of the stem sessile; the radical ones on long petioles, and spreading. Spikes numerous, secund, at first recurved, finally erect, forming a long compound spike or raceme. Corolla at first reddish purple, then of a bright blue, sometimes pale, hairy externally. Stamens unequal. Nuts grayish, acuminate, rough with little tubercles.

Dry fields, road-sides, etc.; rare: introduced from Europe. June – July. A very ornamental plant when in full flower, but sometimes a troublesome weed.

3. PULMONARIA. *Tourn.; Endl. gen.* 3759. *LUNGWORT.*

[So named from the Latin, *pulmones*, the lungs; having formerly been used as a remedy for pulmonary diseases.]

Calyx 5-cleft, somewhat campanulate in fruit. Corolla salver-funnelform; the throat pervious. Nuts ovoid, smooth, not perforate at the base. — Herbaceous plants, sometimes nearly smooth. Radical leaves often spotted. Flowers somewhat paniculate.

Lehmann has united this genus with LITHOSPERMUM, from which, indeed, it differs in characters of but little importance.

1. PULMONARIA VIRGINICA, *Linn.* *Virginian Cowslip. Virginian Lungwort.*

Smooth; stem erect; calyx three times shorter than the tube of the corolla; radical leaves obovate-oblong, obtuse; stem-leaves lanceolate-oblong. — *Linn. sp.* 1. *p.* 135; *Bot. mag. t.* 160; *Michx. fl.* 1. *p.* 131; *Pursh, fl.* 1. *p.* 130; *Ell. sk.* 1. *p.* 228; *Torr. fl.* 1. *p.* 201; *Beck, bot. p.* 255. Lithospermum pulchrum, *Lehm. Asperif. p.* 207. Hippoglossum Virginicum, *Lilja, "fl. övf. odl.* 5. *p.* 18," ex *Linnæa*, 15. *p.* 265, & 17. *p.* 111.

Perennial. Stem about a foot high, succulent, mostly simple. Radical and lower leaves 3 – 6 inches long, more or less obovate, tapering at the base into rather long petioles: stem-leaves smaller; the uppermost nearly sessile. Flowers in a loose racemose panicle. Segments of the calyx ovate, rather obtuse. Corolla three-fourths of an inch long, bright purplish blue; the limb obscurely 5-lobed. Stamens shorter than the corolla: anthers sagittate. Style included: stigma small, simple.

Borders of Oneida creek and Fish creek, Oneida county. Near Albany (*Prof. Eaton*). A showy plant, frequently cultivated in gardens. May.

4. LITHOSPERMUM. *Tourn.; Endl. gen.* 3761. *GROMWELL.*

[From the Greek, *lithos*, a stone, and *sperma*, seed; the nuts (formerly regarded as seeds) being very hard.]

Calyx 5-parted. Corolla funnelform; the throat naked (sometimes with very minute scales). Nuts not perforate at the base, mostly very smooth. — Herbs, or somewhat shrubby rough plants, with the habit of the order.

1. LITHOSPERMUM ARVENSE, *Linn.* *Corn Gromwell. Stone-weed.*

Stem erect, branched; leaves lanceolate, acute, hairy; calyx a little shorter than the corolla, at length spreading; seeds rugose. — *Linn. sp.* 1. *p.* 132; *Engl. bot. t.* 123; *Pursh, fl.* 1. *p.* 131; *Ell. sk.* 1. *p.* 225; *Torr. fl.* 1. *p.* 202; *Bigel. fl. Bost. p.* 71; *Beck, bot. p.* 251; *Darlingt. fl. Cest. p.* 118.

Annual. Whole plant covered with short stiff rather appressed hairs. Stem 8 – 12 inches high, more or less branched. Leaves about an inch long, sessile; the veins indistinct. Flowers axillary, nearly sessile. Calyx with linear acute segments, which finally are much elongated and spreading. Corolla small, yellowish white. Nuts grayish brown, ovoid, acuminate, with the point oblique, rugose and cellular.

Dry fields, road-sides, etc.; rather common. Introduced from Europe. May – June.

2. LITHOSPERMUM OFFICINALE, *Linn.* *Common Gromwell.*

Stem erect, much branched; leaves broadly or ovate-lanceolate, acute, prominently nerved, rough above, hairy underneath; tube of the corolla as long as the calyx; nuts smooth and polished. — *Linn. sp.* 1. *p.* 132; *Engl. bot. t.* 134; *Torr. fl.* 1. *p.* 202; *Bigel. fl. Bost. p.* 71; *Beck, bot. p.* 251; *Hook. fl. Bor.-Am.* 2. *p.* 88.

Perennial. Stem 12 – 18 inches high, often branched from the root and somewhat diffuse, rough with appressed hairs. Leaves 1 – 2 inches long, and from one half to three quarters of an inch wide; the hairs on the upper surface growing out of small depressed tubercles. Flowers in leafy spike-like racemes. Pedicels 2 – 3 lines long. Segments of the calyx subulate-lanceolate. Corolla pale yellow. Nuts ovoid, often with a number of small depressions.

Dry waste places, river-banks, road-sides, etc.; near Singsing, and in the western part of the State. Probably of European origin. June.

5. BATSCHIA. *Gmel. syst.* 315; *Michx. fl.* 1. *p.* 129. *PUCCOON.*

[In honor of JOHN GEORGE BATSCH, a German botanist of the last century.]

Calyx deeply 5-parted. Corolla somewhat salverform; the limb nearly flat, with 5 rounded lobes: throat naked: tube longer than the calyx, with a bearded ring at the base. Stamens very short. Style included: stigma capitate and somewhat 2-lobed. Nuts smooth and shining, not perforate at the base.—Herbaceous hairy or villous plants; the flowers axillary and crowded near the summit of the stem and branches, yellow, large.

1. BATSCHIA CANESCENS, *Michx.* *Common Puccoon. Alkanet.*

Stem villous; leaves lanceolate-oblong, silky pubescent above, almost villous underneath; tube of the corolla about twice as long as the calyx.—*Michx. fl.* 1. *p.* 30. *t.* 14; *Pursh, fl.* 1. *p.* 132; *Bart. fl. N. Am. t.* 58; *Beck, bot. p.* 252; *Darlingt. fl. Cest. p.* 118. Anchusa Virginica, *Linn. sp.* 1. *p.* 133. A. canescens, *Muhl. cat. p.* 18. Lithospermum canescens, *Lehm. Asperif. p.* 305; *Torr. fl.* 1. *p.* 203; *Hook. fl. Bor.-Am.* 2. *p.* 88.

Root large, descending obliquely, red. Stems 8 – 12 inches high, often several from one root, sometimes trichotomously branched at the summit, clothed with rather stiff spreading hairs. Leaves about an inch and a half long and 3 – 5 lines wide, pale green, rather obtuse or sometimes slightly emarginate; the pubescence of the upper surface more silky and appressed than that of the lower. Flowers usually in two short unequal leafy racemes, which are circinate, with the flowers much crowded. Segments of the calyx linear-lanceolate, villose. Corolla more than half an inch long, bright orange-yellow. Stamens nearly sessile, about one-third the length of the tube of the corolla. Style included: stigma distinctly capitate, and cleft into two lobes. Nuts ovoid, hard and smooth.

Northern part of the State (*Prof. Hadley*). May. The root of this plant is used by the Indians of Canada and the Northwest, for painting red.

6. LYCOPSIS. *Linn.; Endl. gen.* 3767. *BUGLOSS.*

[So named from the Greek, *lykos*, a wolf, and *opsis*, a face, or appearance; from a fancied resemblance to the head of that animal.]

Calyx 5-cleft. Corolla funnel-shaped, with a curved tube; the mouth closed with convex connivent scales. Nuts rugose, concave at the base.—Herbaceous hairy plants. Flowers racemose.

1. LYCOPSIS ARVENSIS, *Linn.* *Small Bugloss.*

Leaves lanceolate, somewhat clasping, repandly denticulate, very hispid; racemes leafy; calyx erect when in flower.— *Linn. sp.* 1. *p.* 139; *Engl. bot. t.* 938; *Pursh, fl.* 1. *p.* 132; *Torr. fl.* 1. *p.* 207; *Bigel. fl. Bost. p.* 71; *Beck, bot. p.* 253.

Annual. Whole plant rough and almost bristly. Stem 12 – 18 inches high, simple or somewhat branched. Leaves 2 – 5 inches long; the lower ones tapering into a petiole at the base. Flowers in one or more leafy racemes; the pedicels 2 – 3 lines long. Calyx as long as the tube of the corolla; the segments lanceolate. Corolla small, bright blue. Nuts large, rough and coarsely reticulated with elevated veins.

Sandy fields, hill-sides, etc. Washington county (*Dr. Stevenson*). Doubtless an introduced plant. June – July.

7. MYOSOTIS. *Linn.; Endl. gen.* 3772. *SCORPION-GRASS.*

[From the Greek, *mys, myos*, a mouse, and *ous, otos*, an ear; in allusion to the form of its leaves.]

Calyx 5-parted, salverform; the lobes obtuse or emarginate: throat closed with six short connivent scales: tube short. Stigma capitate. Nuts smooth or rugose, with a cavity at the base.— Herbs, with the flowers in simple racemes.

1. MYOSOTIS PALUSTRIS, *Roth.* *Marsh Scorpion-grass. Forget-me-not.*

Leaves lanceolate-oblong, slightly rough with appressed hairs; peduncles diverging when in fruit, about twice as long as the spreading calyx; limb of the corolla flat, longer than the tube. — *Pursh, fl.* 1. *p.* 133; *Lehm. Asperif. p.* 88; *Torr. fl.* 1. *p.* 206; *Bigel. fl. Bost. p.* 72; *Beck, bot. p.* 253; *Darlingt. fl. Cest. p.* 120; *Hook. fl. Bor.-Am.* 2. *p.* 81. M. laxa, *Lehm. l. c.* M. strigillosa, *Bertol. in Giorn. ligust. sc. et art. Jan.* 1827, *p.* 9?

Perennial. Stem 1 – 2 feet high, slender and weak, erect or oblique, branching above, usually nearly smooth, but sometimes slightly hairy. Leaves 1 – 3 inches long and 3 – 6 lines wide, rather obtuse; the lower ones smooth, but the upper ones sprinkled with appressed hairs. Flowers in racemes, which are at first short, but finally become much lengthened; the pedicels 1 – 4 lines long, filiform. Segments of the calyx lanceolate, rather acute.

Flowers scarcely more than two lines long. Corolla bright blue with a yellow centre. Nuts ovate, lenticularly compressed, margined, dark brown and shining.

Small streams and springy grounds; very common. April – September. Our plant differs from the European in its smaller flowers. It seems to be the var. *micrantha* of Lehmann in *Hooker's fl. Bor.-Am. l. c.*

2. MYOSOTIS ARVENSIS, *Sibth.* *Field Scorpion-grass.*

Leaves oblong-lanceolate, hairy; pedicels somewhat erect when in fruit, about as long as the closed calyx; limb of the corolla erect-spreading, as long as the tube. — *Lehm. Asperif. p.* 90; *Pursh, fl.* 1. *p.* 133; *Torr. fl.* 1. *p.* 207; *Borrer in Engl. bot. suppl. t.* 2629; *Beck, bot. p.* 253; *Darlingt. fl. Cest. p.* 120. M. scorpioides (α.), *Michx. fl.* 1. *p.* 129. M. verna, *Nutt. gen.* 2. *suppl.* Lycopsis Virginica, *Pursh, l. c. p.* 133? excl. syn.; *Bigel. fl. Bost. p.* 71.

Annual. Whole plant grayish-pubescent. Stem 3 – 8 inches high, erect, at first nearly simple, finally branching. Leaves 4 – 8 lines long, rather obtuse. Raceme elongated in fruit. Pedicels of the flowers 1 – 2 lines long. Calyx clothed with spreading hairs; the segments narrowly lanceolate, acute. Corolla very small, white. Nuts resembling those of the preceding species.

Sandy fields, hill-sides and dry open woods; rather common. May – June.

8. SYMPHYTUM. *Linn.; Endl. gen.* 3776. *COMFREY.*

[Named from the Greek, *symphyo*, to grow together; because of its healing virtues.]

Calyx 5 cleft or 5-parted. Corolla tubular-campanulate: throat closed with five connivent subulate scales; the limb with five short lobes. Nuts ovoid, rugose, not perforate at the base. — Perennial herbs, with the racemes of flowers solitary or in pairs.

1. SYMPHYTUM OFFICINALE, *Linn.* *Common Comfrey.*

Stem winged above; leaves ovate-lanceolate, narrowed at the base and decurrent; racemes nodding.—*Linn. sp.* 1. *p.* 136; *Engl. bot. t.* 817; *Darlingt. fl. Cest. p.* 121.

Root large and thick. Stem 1 – 2 feet high, branching above. Leaves 6 – 10 inches long, acuminate, rough; those of the root petioled: upper ones sessile. Racemes many-flowered. Segments of the calyx lanceolate, bristly. Corolla large, yellowish white or rarely purplish. Style slightly exserted. Nuts acuminate, dark and shining.

Wet meadows and borders of small streams in the western parts of the State. June. An European plant, which has become naturalized in many places. It has long been celebrated for its medicinal virtues, but it seems to be of very little value except for its mucilaginous qualities.

9. CYNOGLOSSUM. *Linn.; Endl. gen.* 3784. HOUND'S-TONGUE.

[From the Greek, κυων, a dog, and γλωσσα, a tongue: from the form of the leaves.]

Calyx 5-parted. Corolla funnelform; the throat closed by 5 connivent scales: limb with 5 obtuse lobes. Nuts depressed, covered with rigid prickles. — Herbs, with the racemes simple or paniculate.

1. CYNOGLOSSUM OFFICINALE, *Linn.* *Common Hound's-tongue.*

Whole plant silky-pubescent; radical leaves lanceolate-oblong, attenuate at the base; stem-leaves lanceolate, sessile; racemes paniculate, without bracts; stamens included. — *Linn. sp.* 1. *p.* 134; *Engl. bot. t.* 921; *Pursh, fl.* 1. *p.* 123; *Bigel. fl. Bost. p.* 72; *Torr. fl.* 1. *p.* 208; *Beck, bot. p.* 254; *Darlingt. fl. Cest. p.* 122; *Lehm. in Hook. fl. Bor.-Am.* 2. *p.* 85.

Biennial. Whole plant of a dull green color, and clothed with a soft pubescence. Stem 1 – 2 feet high, branching. Lower leaves on long petioles. Racemes numerous, naked. Calyx-segments spreading in fruit. Corolla purplish red. Nuts large, densely covered with rigid prickles.

Road-sides and waste grounds; common. June – July. Introduced. The plant has an unpleasant smell, which has been compared to that of mice. It is quite annoying to wool-growers, owing to its rough adhering nuts, which resemble little burs.

2. CYNOGLOSSUM VIRGINICUM, *Linn.* *Wild Comfrey. Hound's-tongue.*

Plant hairy; radical leaves oval-oblong, petiolate; stem-leaves lanceolate-oblong, clasping and cordate at the base; racemes corymbose, on a long naked peduncle.—*Linn. sp.* 1. *p.* 139; *Lehm. Asperif. p.* 156; *Torr. fl.* 1. *p.* 208; *Beck, bot. p.* 254; *Darlingt. fl. Cest. p.* 122; *Hook. fl. Bor.-Am.* 2. *p.* 85. C. amplexicaule, *Michx. fl.* 1. *p.* 132; *Pursh, fl.* 1. *p.* 133; *Ell. sk.* 1. *p.* 228.

Perennial. Stem 2 – 3 feet high, erect, simple, clothed with whitish spreading or retrorse hairs. Radical leaves 6 – 8 inches long and 2 – 4 inches wide, narrowed at the base into a petiole: stem-leaves smaller, and somewhat auriculate at the base. Peduncle 3 – 6 inches long. Flowers in a terminal corymb or panicle, which consists of two or three divisions: the lower flowers in each division a raceme, on elongated pedicels. Segments of the calyx oblong. Corolla pale blue or nearly white; the tube as long as the calyx; the throat closed by five little connivent pouches, which are formed by the protrusion of the corolla inward, having pits or cavities on the outside. Nuts as in the preceding species.

Rocky woods in rich soils; on the Hudson, above the Highlands. May – June. The mucilaginous root is used for colds, and as a poultice for sprains, etc. As Dr. Darlington remarks, it serves very well to amuse the patient.

10. ECHINOSPERMUM. *Schwartz*, ex *Lehm. Asperif. p.* 113. *STICKSEED.*

[From the Greek, *echinos*, a hedgehog, and *sperma*, a seed; the fruit being covered with prickles.]

Calyx 5-cleft. Corolla somewhat salverform; the throat closed with convex scales. Nuts compressed or angular, muricate on the margin. — Hairy herbaceous plants, with the habit of MYOSOTIS, but differing in the fruit.

1. ECHINOSPERMUM LAPPULA, *Lehm.* *Narrow-leaved Stickseed.*

Stem paniculately branched above; leaves lanceolate, rather obtuse, rough and hairy; corolla longer than the calyx, the border erect-spreading; fruit erect, the angles armed with hooked prickles in a double row. — *Lehm. Asperif. p.* 121; *Beck, bot. p.* 254; *Hook. fl. Bor.-Am.* 2. *p.* 84. Myosotis Lappula, *Linn. sp.* 1. *p.* 131; *Flor. Dan. t.* 692; *Michx. fl.* 1. *p.* 129; *Pursh, fl.* 1. *p.* 134. Rochelia Lappula, *Rœm. & Schult. syst.* 4. *p.* 109; *Torr. fl.* 1. *p.* 208.

Annual. Stem a foot or more high, covered with greyish spreading hairs, simple below. Leaves 1 – 2 inches long, very hairy; the hairs mostly tuberculate at the base. Flowers in leafy racemes; the pedicels very short. Segments of the calyx linear-lanceolate, acute. Corolla about one-third longer than the calyx, blue. Prickles of the fruit barbed (glochidate) at the tip.

Road-sides, and on dry hills; common in the northern and western parts of the State; not observed below the Highlands of the Hudson. Probably introduced from Europe. July – August.

2. ECHINOSPERMUM VIRGINICUM, *Lehm.* *Broad-leaved Stickseed.*

Leaves oblong-lanceolate, acuminate, thinly covered with appressed hairs above, pubescent underneath; racemes divaricate; fruit deflexed, covered with hooked prickles. — *Lehm. Asperif. p.* 117; *Beck, bot. p.* 254; *Darlingt. fl. Cest. p.* 121; *Lehm. in Hook. fl. Bor.-Am.* 2. *p.* 83. Myosotis Virginiana, *Linn. sp.* 1. *p.* 131; *Michx. fl.* 1. *p.* 129; *Pursh, fl.* 1. *p.* 134; *Ell. sk.* 1. *p.* 224; *Bigel. fl. Bost. p.* 73. Rochelia Virginiana, *Rœm. & Schult.* 4. *p.* 108; *Torr. fl.* 1. *p.* 209.

Biennial. Stem 2 – 3 feet high, divaricately branched at the summit, hairy. Leaves 3 – 4 inches long and an inch or more wide, acute at each end, thin and membranaceous; the lower ones petioled. Racemes mostly forked, bracteate. Pedicels nearly as long as the flower, at length deflexed. Segments of the calyx ovate-lanceolate. Corolla very small, white. Fruit nearly as in the preceding species, but the nuts more depressed.

Borders of woods, along fences, and hill-sides; rather common. July. The nuts of this and the preceding species resemble small burs, and adhere to the covering of sheep, so as to cause some trouble where the plants abound.

GROUP 10. *Ovary free (superior), either compound or the carpels distinct, with several or numerous (rarely solitary) ovules in each cell. Fruit capsular, follicular or baccate. Corolla regular; the stamens inserted upon its tube, as many as its lobes and alternate with them.*

ORDER LXXIII. HYDROPHYLLACEÆ. *R. Br.* THE WATERLEAF TRIBE.

Calyx 5-cleft; the sinuses often with appendages, persistent. Corolla regular, usually furnished with scales or honey-bearing grooves on the inside of each lobe. Stamens 5, inserted into the base of the corolla. Ovary with 2 parietal placentæ, sometimes separating from the walls: styles united into one. Fruit a capsule. Seeds few; the testa crustaceous. Embryo small, in cartilaginous albumen. — Herbs, often hairy, with alternate and lobed or pinnatifid leaves. Flowers in cymose clusters, or in one-sided racemes.

1. HYDROPHYLLUM. *Tourn.; Endl. gen.* 4827. *WATER-LEAF.*

[From the Greek, *hydor*, water, and *phyllon*, a leaf; but the allusion is not evident.]

Calyx 5-parted; the sinuses naked, or with small reflexed appendages. Corolla somewhat campanulate, 5-cleft, with five longitudinal linear adnate scales inside, alternating with the lobes. Stamens exserted. Ovary with two large fleshy placentæ which are attached to the walls by a narrow dorsal line, each bearing two ovules on the face: style filiform: stigma 2-cleft. Capsule globose, 2-valved, 4-seeded; three of the seeds usually abortive: placenta at length free, and resembling an interior pericarp. — Leaves broad, pinnately or palmately lobed. Racemes corymbose, scorpioid and dichotomous.

* *Sinuses of the calyx without appendages.*

1. HYDROPHYLLUM VIRGINICUM, *Linn.* *Virginian Waterleaf.*

Stem smoothish; leaves pinnately divided, the lobes oval-lanceolate, deeply serrate; peduncles longer than the petioles of the upper leaves; calyx-segments hairy-ciliate.— *Linn. sp.* 1. *p.* 146; *Lam. ill. t.* 97. *f.* 1; *Michx. fl.* 1. *p.* 134; *Pursh, fl.* 1. *p.* 134; *Ell. sk.* 1. *p.* 232; *Torr. fl.* 1. *p.* 219; *Bigel. fl. Bost. p.* 73; *Bot. reg. t.* 331; *Beck, bot. p.* 255; *Turp. atl. dict. sc. nat.* 4. *t.* 46; *Darlingt. fl. Cest. p.* 127; *Hook. fl. Bor.-Am.* 2. *p.* 78.

Perennial. Rhizoma creeping. Stems 12 – 18 inches high, growing in clusters, often branched at the base. Leaves pinnately cut into 5 – 7 segments; petioles of the lower ones

4 – 6 inches long. Peduncles 3 – 5 inches long, usually forked; each division bearing a dense cymose cluster of racemes: pedicels 3 – 6 lines long. Calyx deeply 5-parted; the segments linear, hispidly fringed with long spreading white hairs. Corolla white, with purplish veins; the lobes ovate, obtuse: on the inside of each, and extending about half its length, is a linear process or scale, with a longitudinal closed chink. Stamens nearly twice the length of the corolla: filaments bearded: anthers linear-oblong. Ovary ovate-globose, hairy; the large placenta nearly filling up the cell, and surrounding the ovules. Capsule the size of a small pea; only one of the seeds usually arriving at perfection. Testa of the seed areolate. Embryo very small, excentric.

Moist shady places, in rich soil. *Fl.* May. *Fr.* July. The young leaves are said to be eaten as a potherb, under the name of *John's Cabbage.*

2. HYDROPHYLLUM CANADENSE, *Linn.* *Canadian Burr Waterleaf.*

Somewhat hairy; leaves palmately and angularly somewhat 5-lobed; peduncles shorter than the leaves; calyx slightly hairy. — *Willd. sp.* 1. *p.* 815; *Lam. ill. t.* 97. *f.* 2; *Michx. fl.* 1. *p.* 134; *Pursh, fl.* 1. *p.* 134; *Torr. fl.* 1. *p.* 220; *Beck, bot. p.* 255; *Benth. in Linn. trans.* 17. *p.* 273; *Hook. fl. Bor.-Am.* 2. *p.* 78.

Perennial. Rhizoma creeping. Stem 12 – 18 inches high. Leaves on very long petioles, mostly cordate at the base, slightly hairy above; the lobes broad, cut and toothed. Flowers in rather crowded corymbose racemes. Segments of the calyx linear-subulate. Corolla white, veined with purple. Stamens, etc. as in the preceding species.

In rich shady soils, northern and western parts of the State; common. June. This, like the preceding, is used as a potherb, being one of the numerous vegetables known as *greens.*

** DECEMIUM, Raf. *Sinuses of the calyx appendiculate.*

3. HYDROPHYLLUM APPENDICULATUM, *Michx.* *Hairy Waterleaf.*

Stem hairy; lower leaves pinnately divided; upper ones palmately lobed; sinuses of the calyx with small reflex appendages. — *Michx. fl.* 1. *p.* 134; *Pursh, fl.* 1. *p.* 134; *Torr. fl.* 1. *p.* 220; *Benth. l. c.; Hook. fl. Bor.-Am.* 2. *p.* 78. Nemophila paniculata, *Spreng.; Beck, bot. p.* 256.

Perennial? Stem about a foot high, branching at the summit, clothed with rather stiff spreading hairs. Leaves all on long petioles, the breadth as great as the length, hairy above, pubescent underneath; the lobes coarsely serrate and toothed. Peduncles shorter than the leaves. Racemes crowded in a corymbose cluster. Calyx hairy; the segments linear-lanceolate, acute: sinuses with small ovate appendages. Corolla pale purplish blue; the lobes with a longitudinal adnate scale inside, the edges of which are free and folded inward, thus forming a chink or groove. Stamens shorter than the corolla. Ovary as in the preceding.

Woods. Greece, and near Rochester, Monroe county (*Dr. Bradley*).

ORDER LXXIV. POLEMONIACEÆ. *Juss.* THE GREEK-VALERIAN TRIBE.

Calyx 5-cleft. Corolla regular, 5-lobed, imbricated or twisted in æstivation. Stamens 5, often unequal, inserted into the tube of the corolla. Ovary 3-celled, with a thick axis and numerous ovules: style single: stigmas three. Capsule 3-celled, loculicidal; the valves separating from the 3-winged axis. Seeds angular or compressed; the testa spongy, sometimes mucilaginous and furnished with spiral threads. Embryo straight, in fleshy or horny albumen. —Herbs or rarely somewhat shrubby plants, with alternate or opposite leaves, and panicled, corymbose or clustered flowers.

1. PHLOX. *Linn ; Endl. gen.* 3819. *PHLOX.*

[*Phlox* is the Greek for flame, and is said to have been applied by the ancients to a species of LYCHNIS: Linnæus transferred the name to this genus.]

Calyx prismatic; the segments mostly erect. Corolla salverform; the limb flat, 5-lobed: tube long, more or less curved. Stamens very unequal, inserted about the middle of the tube of the corolla. Ovary with a single ovule in each cell. Capsule globose-ovate, 3-seeded. Seeds plano-convex. — Perennial herbs; the leaves mostly opposite and sessile. Flowers more or less corymbose-paniculate.

1. PHLOX DIVARICATA, *Linn.* *Divaricate Phlox.*

Stem pubescent, decumbent, with spreading branches; leaves oval-lanceolate or lanceolate-ovate, the upper ones alternate; panicles loose, few-flowered; lobes of the corolla obcordate; teeth of the calyx subulate-linear. — *Linn. sp.* 1. *p.* 152; *Bot. mag. t.* 163; *Michx. fl.* 1. *p.* 144; *Pursh, fl.* 1. *p.* 150; *Ell. sk.* 1. *p.* 248; *Torr. fl.* 1. *p.* 229; *Beck, bot. p.* 247; *Darlingt. fl. Cest. p.* 129; *Hook. fl. Bor.-Am.* 2. *p.* 72.

Root creeping. Stems numerous, about a foot long, spreading and some of them prostrate, with erect branches. Leaves an inch and a half long and 5 – 8 lines wide, thin, sparingly hairy; some of them obtuse, others rather acute at the base; the uppermost almost clasping and often alternate. Panicles irregular, usually trichotomous with spreading divisions. Segments of the calyx at first erect, finally spreading. Corolla bluish purple; the tube about three-fourths of an inch long, slightly curved.

Banks of rivers, mostly in rich damp soils: northern and western counties. *Fl.* May. *Fr.* July.

2. PHLOX SUBULATA, *Linn.* *Mountain Pink.*

Stems procumbent, cespitose, pubescent, much branched, the branches assurgent; leaves linear-subulate, rigid, ciliate; corymbs few-flowered; calyx-segments subulate; lobes of the corolla cuneate, emarginate.—*Linn. sp.* 1. *p.* 152; *Bot. mag. t.* 411; *Michx. fl.* 1. *p.* 145; *Pursh, fl.* 1. *p.* 151; *Ell. sk.* 1. *p.* 249; *Torr. fl.* 1. *p.* 229; *Beck, bot. p.* 247; *Darlingt. fl. Cest. p.* 129.

Root creeping. Stems 6 – 12 inches long, forming little tufts; the branches 3 – 4 inches high. Leaves about half an inch long and scarcely more than a line wide, with tufts of smaller leaves or rudimentary branches in the axils. Corymbs or rather cymes 3 – 5-flowered. Calyx hairy; the segments rigid like the leaves. Corolla pink or bright purple, with a darker centre (sometimes pale or almost white); the tube about one-third longer than the calyx.

Rocky banks and hill-sides, particularly along rivers. April – May. I am not sure that I have found this plant strictly within the limits of the State, but it is abundant on our immediate borders in New-Jersey, and Muhlenberg records it as a native of New-York.

2. POLEMONIUM. *Tourn.; Endl. gen.* 3822. *GREEK VALERIAN.*

[From the Greek, *polemos*, war. According to Pliny, the plant to which this name was first given, was the cause of a war between two kings, who could not agree which of them first discovered its virtues.]

Calyx campanulate. Corolla campanulate-rotate; the limb 5-lobed: tube short, closed by the dilated bases of the filaments. Ovary with many ovules in each cell. Capsule globose-ovoid; the cells many- (or by abortion few-) seeded. — Herbs, with alternate pinnately divided leaves, and flowers in terminal columns.

1. POLEMONIUM REPTANS, *Linn.* *Jacob's Ladder.*

Stem slender, erect or declined; leaflets 7 – 9 (rarely 11); flowers terminal, nodding. — *Linn. sp.* (ed. 2.) 1. *p.* 230; *Mill. ic. t.* 209; *Michx. fl.* 1. *p.* 142; *Pursh, fl.* 1. *p.* 151; *Ell. sk.* 1. *p.* 261; *Nutt. gen.* 1. *p.* 127; *Torr. fl.* 1. *p.* 230; *Beck, bot. p.* 248; *Darlingt. fl. Cest. p.* 127.

Root perennial, creeping. Stem 12 – 18 inches high, branching, smooth. Leaves nearly smooth; the segments opposite or irregular, ovate-lanceolate, about an inch long, acute; the petiole winged. Flowers terminating the branches, in small corymbs. Pedicels nearly half an inch long. Calyx smooth, veiny, finally somewhat inflated; the lobes ovate, acute. Corolla blue, nearly three times as long as the calyx; the lobes short, rounded. Stamens shorter than the corolla: anthers roundish. Style longer than the stamens. Capsule (by abortion) mostly 3-seeded. Seeds emitting, when moistened, an innumerable multitude of spiral threads, which to the naked eye appear like a thick mucus.

Moist woods and meadows. Cattaraugus county (*Dr. Bradley*). May. The seeds of this plant emit the spiral threads from the surface of the testa almost as copiously as those of COLLOMIA.

Order LXXV. DIAPENSIACEÆ. *Lindl.* The Diapensia Tribe.

Calyx of five imbricated sepals, persistent, with three bracts at the base. Corolla somewhat salverform, 5-lobed. Stamens 5, with broad petaloid filaments which are inserted into the throat of the corolla, and alternate with its lobes: anthers transversely or obliquely 2-valved. Ovary 3-celled, with few or many ovules in each cell. Capsule 3-valved, loculicidal. Seeds pitted. Embryo in the axis of fleshy albumen. — Low prostrate evergreens, growing in tufts, with crowded leaves and solitary terminal flowers. Pollen simple, spherical.

1. DIAPENSIA. *Linn.; Endl. gen.* 4345. *DIAPENSIA.*

[A Greek name for the Sanicle, and applied to this plant by Linnæus.]

Calyx herbaceous; the segments unequal, smooth. Corolla 5-lobed. Filaments broadly linear: anther-cells distinct, oblong, opening obliquely. Ovary with numerous ovules. — A densely tufted evergreen, with a woody caudex, thick spatulate leaves, and peduncled solitary flowers.

1. Diapensia Lapponica, *Linn.* *Lapland Diapensia.*

Linn. fl. Lapp. no. 88. *t.* 1. *f.* 1; *Wahl. fl. Lapp. p.* 58. *t* 9; *Torr. fl.* 1. *p.* 230; *Bigel. fl. Bost. p.* 83; *Beck, bot. p.* 250; *Brit. fl. gard.* (ser. 2.) *t.* 251; *Hook. fl. Bor.-Am.* 2. *p.* 76. D. obtusifolia, *Salisb. parad. Lond. t.* 104; *Pursh, fl.* 1. *p.* 147.

Caudex woody, buried in the ground; the branches very densely covered with leaves, forming thick firm tufts. Leaves about half an inch long and rather more than a line broad, spatulate, imbricate, very smooth, a little recurved. Flowers on short peduncles. Bracts resembling the segments of the calyx; the outer one sometimes rather remote. Calyx parted to the base; the segments somewhat unequal in length and breadth, very obtuse. Corolla white; the lobes short and rounded. Stamens shorter than the corolla: filaments smooth: anthers of two roundish lobes, opening obliquely by a slit. Ovary roundish-ovoid, with numerous ovules in each cell, attached to the outside of fleshy placentæ: style straight, about as long as the stamens: stigma small, obscurely 3-lobed. Capsule cartilaginous, obtusely 3-angled: seeds somewhat angular, pitted.

Summit of Mount Marcy and Mount McIntyre, Essex county. *Fl.* Early in July. *Fr.* September. This plant has not been found elsewhere in the United States, except on the highest peaks of the White Mountains of New-Hampshire. It occurs in Labrador, in Arctic America, and in the northern regions of Europe.

ORDER LXXVI. CONVOLVULACEÆ. *Juss.* THE BINDWEED TRIBE.

Calyx of five imbricated more or less united sepals, persistent. Corolla regular, plaited and twisted in æstivation; the border 5-lobed, or nearly entire. Stamens 5, inserted on the tube of the corolla near the base Ovary free, 2 – 4-celled, with one or two erect ovules in each cell: styles united, or more or less distinct: stigmas simple or capitate. Capsule 2 – 4- (or by abortion 1-) celled; the valves separating from the dissepiments. Seeds large, with but little mucilaginous albumen. Embryo curved; the cotyledons leafy, folded and crumpled.—Twining or trailing (rarely erect) herbs or shrubs, often with milky juice. Leaves alternate, very often cordate, entire or lobed. Flowers large and showy.

1. CONVOLVULUS. *Linn.; Endl. gen.* 3803. *BINDWEED.*

[From the Latin, *convolvo*, to entwine.]

Sepals equal, naked at the base. Corolla campanulate-funnelform, obscurely 5-lobed. Stamens mostly included: filaments dilated at the base. Style single: stigmas 2, linear, flattened or globose. Capsule 2-celled.— Herbs, or rarely shrubby plants. Stem mostly twining. Leaves usually cordate or sagittate.

1. CONVOLVULUS ARVENSIS, *Linn.* *Common Bindweed.*

Stem twining, angular and striate; leaves sagittate and somewhat hastate at the base; peduncles usually one-flowered, with two small bracts towards the summit remote from the flower; sepals rounded; lobes of the stigma linear and elongated. — *Linn. sp.* 1. *p.* 153; *Engl. bot. t.* 312; *Pursh, fl.* 1. *p.* 144; *Bigel. fl. Bost. p.* 50; *Torr. fl.* 1. *p.* 224; *Beck, bot. p.* 248; *Darlingt. fl. Cest. p.* 181; *Hook. fl. Bor.-Am.* 2. *p.* 77.

Root perennial, creeping extensively. Stems 2 – 3 feet long, a little hairy, climbing over other plants or spreading on the ground. Leaves 1 – 1½ inch long, ovate-oblong; the lobes at the base acute: petiole about half an inch long. Peduncles mostly longer than the leaves, with two small bracts half an inch or more below the flower. Corolla pale red or nearly white, about an inch long.

Sandy fields and cultivated grounds: about Albany and in the northern part of the State. Introduced from Europe. June – July. This is often a troublesome weed; the roots being very deep and spreading, as well as highly tenacious of life.

2. CONVOLVULUS PANDURATUS, *Linn.* *Man of the earth. Wild Potato-vine.*

Stem twining; leaves cordate or panduriform, acuminate, the lobes rounded; peduncles 1 – 5-flowered; calyx smooth, slightly mucronate, the two outer sepals obtuse; corolla tubular-campanulate.—*Linn. sp.* 1. *p.* 153; *Michx. fl.* 1. *p.* 138; *Ell. sk.* 1. *p.* 254; *Bart. veg. mat. med. t.* 23; *Torr. fl.* 1. *p.* 225; *Beck, bot. p.* 249; *Darlingt. fl. Cest. p.* 131; *Hook. fl. Bor.-Am.* 2. *p.* 77.

Root perennial, very thick and often weighing from 10 to 20 pounds, variable in form. Stem 4 – 8 feet long, generally trailing on the ground, pubescent when young, finally almost smooth. Leaves 2 – 3 inches long, smooth, roundish-cordate, acuminate, often contracted at the sides and more or less panduriform; the lobes rounded: petioles 1 – 2 inches long. Flowers often solitary, particularly toward the upper part of the stem, but usually several in a fascicle; the common peduncle jointed to the pedicels. Sepals unequal; the three inner longer, and usually tipped with an abrupt subulate point; the others mostly obtuse. Corolla nearly two inches long, white, with a purplish tube. Stigma short, somewhat globose.

Dry fields and borders of woods; southern part of the State, and on Staten Island. *Fl.* July – August. *Fr.* September. The root has long been employed as a domestic medicine, and is a favorite remedy of some "botanic doctors." It is bitterish and somewhat astringent, and, like many other species of the genus, is somewhat cathartic. According to Dr. Barton, it is also diuretic, and is useful in gravel. (See *Wood & Bache, U. S. Dispens. p.* 259.)

2. CALYSTEGIA. *R. Brown, prodr. p.* 483; *Endl. gen.* 3801. *CALYSTEGIA.*

[From the Greek, *kales* pretty, and *stege*, a covering; in allusion to the two large bracts which enclose the calyx.]

Calyx enclosed in two large leafy bracts. Corolla campanulate-funnelform, obscurely 5-lobed. Stamens included. Style single: stigmas 2, obtuse, terete or globose. Capsule 1-celled, 4-seeded. — Herbs, with reniform or sagittate leaves and axillary 1-flowered peduncles.

1. CALYSTEGIA SEPIUM, *R. Br.* *Great Bindweed.*

Stem twining; leaves sagittate, very acute, the lobes obliquely truncate; peduncles 4-angled; bracts longer than the calyx, acute.—*R. Br. prodr.* 1. *p.* 483; *Pursh, fl.* 1. *p.* 142; *Hook. fl. Bor.-Am.* 2. *p.* 77. Convolvulus Sepium, *Linn. sp.* 1. *p.* 153; *Engl. bot. t.* 313; *Torr. fl.* 1. *p.* 225; *Bigel. fl. Bost. p.* 78; *Beck, bot. p.* 249; *Darlingt. fl. Cest. p.* 130. C. repens, *Linn. l. c.*; *Michx. fl.* 1. *p.* 137; *Ell. sk.* 1. *p.* 233.

Root perennial, descending deep into the earth. Stem smoothish, 4 – 12 feet long, often purplish. Leaves about 3 inches long and 1½ broad, oblong; the lobes more or less obliquely truncate: petioles 1 – 2 inches long. Peduncles longer than the leaves. Bracts oblong-cordate, green bordered with purple, about one half the length of the corolla, with a longitudinal carinate fold, covering the unequal sepals. Corolla white, with the border pale purple or rose-color, nearly three inches long. Stigmas 2, hemispherical, white and granulated.

Moist grounds, climbing over bushes; sometimes as a weed in cultivated grounds; common, particularly in the northern and western counties. June – July.

2. CALYSTEGIA SPITHAMÆA, *Pursh.* *Upright Bindweed.*

Erect, oblique or sometimes nearly procumbent, hoary-pubescent; leaves obovate-oblong, obtuse or acute; peduncles usually longer than the leaves; bracts ovate, acute; calyx two-thirds the length of the bracts, its sepals lanceolate.—*Pursh, fl.* 1. *p.* 143; *Hook. exot. fl.* 1. *t.* 97, *and fl. Bor.-Am.* 2. *p.* 77. C. tomentosa, *Pursh, l. c.* Convolvulus spithamæus, *Linn. sp.* 1. *p.* 158; *Ell. sk.* 1. *p.* 251; *Torr. fl.* 1. *p.* 225. C. stans, *Michx. fl.* 1. *p.* 136; *Bigel. fl. Bost. p.* 79.

Perennial. Stem 8 inches – 2 feet long, sparingly branched, never twining. Leaves varying from acuminate to obtuse. Peduncles one or two from the lower part of the stem, not often shorter than the leaves. Bracts completely covering the calyx. Corolla white, nearly two inches long. Styles sometimes cleft one-third of the way down: stigmas oblong.

Dry woods and copses; not common. June. A somewhat variable species, especially as to height; but there can be little doubt that *C. stans* of Michaux is one of its forms.

SUBORDER CUSCUTINEÆ. *Link.* THE DODDER TRIBE.

Capsule opening all round, or bursting irregularly. Embryo spirally coiled around mucilaginous albumen, without cotyledons.—Parasitical twining plants, destitute of verdure, but furnished with little scales instead of leaves, usually of a reddish or orange color. Flowers in small cymules, which are often densely aggregated. All the species first spring from the ground, but soon attach themselves to other plants, from whence they draw their nourishment by means of numerous papillose roots, and thus become truly parasitic.

3. CUSCUTA. *Linn.; Endl. gen.* 3816; *Choisy in mem. soc. phys. et d'hist. nat. Genev.* 9. (1841 – 2); *Englemann in Sill. journ.* 43. (*Oct.* 1842), *p.* 335.* DODDER.

[Etymology uncertain.]

Calyx 4 – 5-cleft. Corolla urceolate-campanulate, 4 – 5-cleft. Filaments often with scales at the base. Styles 2, distinct or rarely united: stigmas filiform or (as in all the indigenous North American species) capitate. Capsule imperfectly 2-celled, 4-seeded; one or more of the seeds often abortive. — Habit that of the suborder.

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* See Dr. Englemann's elaborate and accurate monograph of the North American Cuscutineæ, in the work here quoted. The author had been anticipated in several of his species by Choisy, whose memoir appeared a short time earlier, so that some changes in the nomenclature were required. These were made in Dr. Englemann's additional paper, in *Sill. jour. vol.* 45, *July* 1843.

1. Cuscuta Gronovii, *Choisy.* *Common Dodder.*

Stem branched; flowers pedunculate or more lax, generally 5-parted; tube of the corolla deeply campanulate, longer than the pellucid-punctate open (finally reflexed) lobes of the roundish carinate obtuse and slightly crenulate calyx-segments; scales convergent, fimbriate, united at the base; styles about as long as the ovary; the remains of the corolla persistent at the base of the oval capsule. — *Choisy, l. c. t.* 4. *f.* 3. C. vulgivaga, *Englem. l. c. p.* 338. C. Americana, *Linn. sp.* 1. *p.* 124 (in part), and of most other authors?

Stems filiform, orange-colored, closely twining about the stems of other plants, and partly hanging loosely. Flowers sometimes rather loose, in small cymules or nearly solitary, but more commonly much crowded. Calyx and corolla (particularly the latter) marked with pretty conspicuous little roundish glands, which are filled with a terebinthine matter. Styles erect, mostly unequal, elongated after flowering: stigmas capitate. Capsule ovoid; one or two of the seeds often abortive.

Low grounds; very common. July – September.

2. Cuscuta umbrosa, *Beyrich.* *Smooth-flowered Dodder.*

Stem low, branching; flowers 5-parted, somewhat pedunculate, at length in spikes; tube of the corolla campanulate, equal to the somewhat obtuse campanulate or spreading lobes, and longer than the obtuse calycine segments; stamens as long as the limb; scales pinnatifid-laciniate, convergent, covering the ovary; styles as long as the ovoid-globose ovary with the stylopodium; the remains of the corolla persistent at the base of the subglobose capsule. — *Engelm. l. c. p.* 339 (under *C. Saururi*); *Hook. fl. Bor.-Am.* 2. *p.* 78.

Distinguished from the preceding by the more open campanulate corolla, which is destitute of pellucid glands, and the form of its lobes as well as those of the calyx, which are more or less orbicular in *C. vulgivaga* (*Englem.*).

Western part of the State (*Dr. Gray; Dr. Englemann*).

3. Cuscuta Epilinum, *Weihe?* *Flax-vine. Flax Dodder.*

Heads of about five sessile flowers; pentamerous styles included; stigmas acute; corolla with a globose tube, scarcely longer than the spreading campanulate calyx; lobes of the calyx broad, acuminate. — *Reich. ic. bot. t.* 500, ex *Hook. Brit. fl. p.* 109? C. Europæa, *Torr. fl.* 1. *p.* 290; *Beck, bot p.* 250; *Darlingt. fl. Cest. p.* 167, not of *Linn.*

Stem orange-colored, slender, filiform. Flowers in small dense heads, closely sessile. Calyx rather succulent; the lobes with a short but distinct acumination. Corolla nearly globose, pale yellow or rose-colored; the lobes semiovate, obtuse or rather acute, somewhat spongy at the extremity. Stamens nearly as long as the lobes of the corolla. Scales very thin and transparent, oblong, crenate-laciniate. Styles diverging. Capsule globose-turbinate. Seeds 2 – 4, margined when young, nearly globose, reddish brown, rough.

Cultivated fields, parasitic on flax and other plants. Near Schenectady, &c. (*Dr. Beck*). I have not had an opportunity of comparing this plant with authentic specimens of *C. Epilinum*, but it agrees very well with the description of that species as given in the books.

ORDER LXXVII. SOLANACEÆ. *Juss.* THE NIGHTSHADE TRIBE.

Calyx of 4 or 5 more or less united sepals, persistent, or the upper part rarely falling off. Corolla regular or rarely a little irregular, mostly plaited in æstivation. Stamens 5 (rarely 4 or 6). Ovary 2-celled; the placentæ in the axis: style single: stigma undivided or somewhat 2-lobed. Fruit a capsule or berry. Seeds numerous. Embryo usually curved, in fleshy albumen.—Herbs or shrubs, with a watery juice. Inflorescence various: pedicels without bracts.

CONSPECTUS OF THE GENERA.

* *Fruit a capsule or dry berry.*

1. NICOTIANA. Calyx tubular-campanulate. Corolla funnelform, with a slender tube and spreading limb. Capsule 2-valved; the valves sometimes 2-cleft. Seeds minute.
2. DATURA. Calyx tubular, mostly angular, deciduous, leaving an orbicular base. Corolla funnelform. Capsule 2-celled, 4-valved; the cells divided into two by a spurious dissepiment.
3. HYOSCYAMUS. Corolla funnelform, oblique. Capsule opening by a lid.
4. NICANDRA. Corolla campanulate. Stamens curved, distant. Capsule or dry berry 3 – 4-celled, covered by the inflated calyx.

** *Fruit a berry.*

5. PHYSALIS. Corolla campanulate-rotate. Stamens connivent: anthers opening longitudinally. Berry covered by the inflated calyx.
6. SOLANUM. Calyx 5- (rarely 10-) cleft. Corolla rotate, mostly 5-cleft, plaited. Anther-cells opening by a terminal pore. Berry not covered by the calyx.

1. NICOTIANA. *Linn.; Endl. gen.* 3841. *TOBACCO.*

[Named after *John Nicot*, ambassador from France to Portugal in 1560, who introduced the abominable weed into Europe.]

Calyx tubular-campanulate, 5-cleft. Corolla funnelform or salverform; the limb 5-lobed and plaited. Stamens equal: anthers opening longitudinally. Stigma capitate. Capsule 2-celled, loculicidal; the valves at length 2-cleft.—Herbs or rarely undershrubs, often viscidly pubescent, with entire leaves, and the flowers in terminal racemes or panicles.

1. NICOTIANA RUSTICA, *Linn.* *Wild Tobacco.*

Stem terete; leaves petiolate, ovate; tube of the corolla cylindrical, longer than the calyx, the lobes rounded. — *Linn. sp.* 1. *p.* 180; *Nutt. gen.* 1. *p.* 132; *Lehm. hist. Nicot. p.* 13; *Bart. fl. N. Am. t.* 25; *Torr. fl.* 1. *p.* 223; *Beck, bot. p.* 258.

Annual, viscidly pubescent. Stem 1 – 2 feet high, somewhat branching above. Leaves 3 – 8 inches long; the radical ones largest. Flowers in a terminal paniculate raceme; the pedicels bracteate. Calyx about one-third the length of the corolla; the lobes short and

rounded. Corolla dull greenish yellow. Stamens included: filaments bearded at the base. Capsule globose-ovoid.

Old fields in the western parts of the State and on Long Island. A naturalized plant in a few localities, and doubtless introduced by the Indians. It contains the same poisonous principle (*nicotine*) that exists in common tobacco.

2. DATURA. *Linn.; Endl. gen.* 3845. *THORN-APPLE.*

[According to Forskal, the name is an alteration of *Tatúrah*, the Arabic appellation of the plant. In some parts of the East Indies, it is called *Dáturo.*]

Calyx tubular and usually prismatic, separating from the circular persistent base. Corolla funnelform; the limb large, spreading and plaited, 5-toothed. Capsule globose-ovoid, usually prickly or muricate, 2-celled, 4-valved; each cell (except the upper part) divided into two by a false dissepiment extending from the placenta to the walls, so that the capsule (except near the top) has four cells. — Mostly herbaceous plants (sometimes undershrubs or even trees), with ovate often angularly toothed leaves, and large solitary flowers in the forks of the stem.

1. DATURA STRAMONIUM, *Linn.* *Jamestown-* or *Jimson-weed. Stinkweed.*

Leaves ovate, smooth, angularly toothed; capsule spiny, erect. — *Linn. sp.* 1. *p.* 179; *Engl. bot. t.* 1288; *Pursh, fl.* 1. *p.* 141; *Ell. sk.* 1. *p.* 275; *Bigel. med. bot. t.* 1, *and fl. Bost. p.* 79; *Tully in Sill. jour.* 6. *p.* 258; *Torr. fl.* 1. *p.* 232; *Beck, bot. p.* 259; *Darlingt. fl. Cest. p.* 133.

var. *Tatula:* stem and flowers purple. *Torr. l. c.; Beck, l. c.* D. Tatula, *Linn.; Willd. sp.* 1. *p.* 1008; *Pursh, l. c.; Ell. l. c.; Tully, l. c.*

Annual. Stem 2 – 7 feet high, yellowish green (in the var. *Tatula*, dark purple), dichotomously branching, very smooth. Leaves 4 – 8 inches long and 3 – 5 inches wide, alternate or sometimes in opposite pairs; the base somewhat cordate. Flowers on pedicels which are about half an inch long. Corolla about three inches long, white (bluish purple in *Tatula*); the border with five acuminate teeth. Stamens included: anthers linear-oblong. Style filiform: stigma 2-lobed. Capsule ovoid, an inch and a half long, armed with sharp spreading spines. Seeds numerous, black, somewhat kidney-form and rugose.

Waste grounds, road-sides, etc.; common. Introduced. July – September. This well known plant is said to be of Abyssinian origin, but is now spread over most parts of the world. It is a powerful narcotic, and has long been employed medicinally. The seeds (and in a less degree the leaves) contain an active principle called *daturia*. An extract is kept in the shops, which is used in various spasmodic and painful diseases, but it should be administered with caution. Children are frequently poisoned by eating the seeds. (See *Wood & Bache's U. S. Dispens. p* 638.)

3. HYOSCYAMUS. *Tourn.; Endl. gen.* 3847. HENBANE.

[From *hys, hyos,* a hog, and *kyamos,* a bean; because hogs are said to feed on the fruit, which has some resemblance to a bean.]

Calyx tubular, 5-cleft. Corolla funnelform, oblique; the border 5-lobed. Stamens declined. Capsule usually covered with the persistent calyx, opening by a lid. — Herbs of a rank smell and often viscid, with toothed or angular leaves. Flowers axillary and solitary, or in leafy spikes.

1. HYOSCYAMUS NIGER, *Linn.* *Common Henbane.*

Leaves clasping, sinuate and angularly toothed; flowers sessile; corolla reticulate.—*Linn. sp.* 1. *p.* 179; *Engl. bot. t.* 591; *Pursh, fl.* 1. *p.* 144; *Bigel. med. bot. t.* 17, *and fl. Bost. p.* 81; *Torr. fl.* 1. *p.* 224; *Beck, bot. p.* 259.

Annual or biennial. Whole plant viscid and hairy, of a glaucous hue and fetid. Stem 1 – 2 feet high, rigid. Lower leaves large, spreading on the ground, oblong, acute, with large angular teeth; upper ones mostly entire. Flowers in terminal recurved leafy spikes. Calyx reticulate; the segments short and acute, at length prickly. Corolla of a dull yellowish color, reticulated with purple veins. Capsule covered with the persistent calyx, opening by a terminal lid which separates all round.

Road-sides, and among rubbish: Westchester county, &c. Introduced from Europe. June – July. A powerful narcotic; the poisonous effects depending on an active principle called *hyoscyamine.* Its operation is narcotic, anodyne and antispasmodic. An extract of the plant, and the dried leaves, are kept in the shops.

4. NICANDRA. *Adans.; Endl. gen.* 3850. NICANDRA.

[Named in honor of *Nicander,* a Greek physician who lived about a century and a half before Christ.]

Calyx 5-parted, prismatic; the lobes sagittate. Corolla campanulate; the limb plaited and nearly entire. Stamens connivent: anthers opening longitudinally. Berry dry, covered by the calyx, 3 – 4-celled.—An annual herb, with sinuate angular leaves, and single-flowered peduncles which are axillary and in the forks of the stem.

1. NICANDRA PHYSALOIDES, *Gært.* *Nicandra.*

Gært. de fruct. 2. *p.* 237. *t.* 131; *Pers. syn.* 1. *p.* 219; *Pursh, fl.* 1. *p.* 158; *Nutt. gen.* 1. *p.* 130; *Beck, bot. p.* 258. Atropa physaloides, *Linn.*; "*Jacq. obs.* 4. *t.* 98."

Stem 2 – 3 feet high, much branched, smooth. Leaves 2 – 4 inches long, ovate, petiolate, more or less deeply toothed and sinuate. Flowers on short peduncles, which mostly arise from the forks of the stem. Calyx somewhat reticulate. Corolla about an inch in diameter, pale blue; the border spreading. Fruit a kind of dry berry.

Road-sides, vacant lots, and about gardens; almost naturalized in the neighborhood of New-York and in some other places. Originally from Peru. July – September. The Indians of Peru are said to have used this plant as a narcotic in several painful affections.

5. PHYSALIS. *Linn.; Endl. gen.* 3851. *GROUND CHERRY. WINTER CHERRY.*

[From the Greek, *physa*, a bladder; in allusion to the inflated calyx.]

Calyx 5-cleft, persistent, finally large and enclosing the fruit. Corolla campanulate-rotate; the limb plaited, somewhat 5-lobed; the tube very short, usually marked with five concave spots at the base. Stamens 5, connivent: anthers opening longitudinally. Berry 2-celled. — Mostly herbaceous but sometimes shrubby plants, with the leaves alternate or in pairs, and solitary, gemmate, or rarely fascicled lateral flowers.

1. PHYSALIS VISCOSA, *Linn.* *Ground Cherry.*

Herbaceous, pubescent and more or less viscid; stem dichotomously branched, at first erect, then spreading; leaves solitary or in pairs, varying from roundish-ovate to lanceolate-ovate, cordate or acute at the base, repand-dentate or sometimes nearly entire; flowers solitary, axillary, pendulous; calyx cleft to the middle, closed in fruit; corolla with 5 brownish spots at the base. — *Linn. sp.* 1. *p.* 183; *Ait. in Eaton's man. ed.* 7. *p.* 436; *Beck, bot. p.* 258; *Darlingt. fl. Cest. p.* 138. P. obscura, *Michx. fl.* 1. *p.* 149; *Pursh, fl.* 1. *p.* 157; *Torr. fl.* 1. *p.* 233; *Nees, mon. Phys. in Linnæa,* 6, *p.* 457. P. heterophylla, *Nees, l. c.* P. Pennsylvanica, *Linn. sp.* (ed. 2. app.) *p.* 1670.

Root perennial. Stem seldom rising more than a few inches from the ground, but usually spreading in a circular manner. Leaves 2 – 4 inches long and 2 – 3 inches wide, acute, acuminate or sometimes obtuse, coarsely toothed or with the margin only waved, often very unequal at the base: petioles 1 – 2 inches long, often with small leaves in the axils. Flowers on short pedicels, extra-axillary. Calyx campanulate, hairy, 5-angled, veiny, finally large, membranaceous, and loosely enclosing the fruit; the segments ovate-lanceolate, acute. Corolla about three-fourths of an inch in diameter, dull greenish yellow, with five oblong pale brownish spots in the throat; the limb obscurely 5-toothed. Filaments flattened: anthers oblong, blue. Berry completely enclosed in the very large inflated and membranaceous calyx, globose, viscid, yellowish or orange when mature, and of an acid taste.

Fields, borders of woods and hill-sides; rather common. July – August. All the specimens of Physalis that I have collected in the State, or received from my botanical friends from within our limits, must clearly be referred to one species. I cannot see that *P. heterophylla*, NEES, differs in any important respects from *P. viscosa*.

6. SOLANUM. *Linn.; Endl. gen.* 3855. *NIGHTSHADE.*

[Etymology uncertain.]

Calyx 5 – 10-parted, persistent. Corolla rotate or somewhat campanulate; the limb plaited, 5 – 10-cleft. Stamens 5: filaments very short: anthers large, connivent, opening by two terminal pores. Berry 2 – 6-celled. — Herbs or undershrubs, and in hot countries shrubs or even trees, often prickly. Leaves solitary or in pairs, entire or variously divided. Inflorescence various. — Many of the species are more or less poisonous, and contain an active principle called *solanine*.

1. SOLANUM DULCAMARA, *Linn.* *Bittersweet. Wood Nightshade.*

Stem shrubby, flexuous, climbing, unarmed; leaves ovate-cordate, the upper ones hastate; flowers in lateral cymes. — *Linn. sp.* 1. *p.* 185; *Engl. bot. t.* 565; *Pursh, fl.* 1. *p.* 156; *Bigel. med. bot. t.* 18, *and fl. Bost. p.* 84; *Torr. fl.* 1. *p.* 235; *Beck, bot. p.* 257; *Darlingt. fl. Cest. p.* 136.

Stem 6 – 8 feet long, smooth or a little pubescent. Lower leaves entire; the upper ones either hastate, or with two ear-like lobes at the base. Flowers in small cymes, which are opposite the leaves. Calyx with short acute teeth. Corolla purple. Anthers connivent in a pyramidal form. Berries oval, bright scarlet.

Moist hedges and banks. June – August. Introduced. This plant once had reputation as a remedy for rheumatism and scurvy, but is now seldom used. The root, when chewed, is first bitter, then sweetish; hence the common English name.

2. SOLANUM NIGRUM, *Linn.* *Common Nightshade.*

Herbaceous, unarmed; stem angular, rough on the angles; leaves ovate, repand-toothed and waved; flowers somewhat umbelled, drooping.—*Linn. sp.* 1. *p.* 186; *Engl. bot. t.* 566; *Dunal, Solan. p.* 140; *Pursh, fl.* 1. *p.* 156; *Bigel. fl. Bost. p.* 84. S. nigrum, *var.* Virginianum, *Linn. l. c.; Torr. fl.* 1. *p.* 234; *Beck, bot. p.* 257; *Darlingt. fl. Cest. p.* 136. S. alatum, *Mœnch, meth. p.* 474, ex *Pers.* S. pterocaule, *Dunal, Solan. p.* 153, ex *Rœm. & Schult. syst.* 4. *p.* 588.

Annual. Stem 1 – 2 feet high, much branched and often spreading; the angles sometimes slightly winged. Leaves 2 – 3 inches long and 1 – 2 inches wide, varying from nearly entire to coarsely repand-toothed, abruptly narrowed at the base. Umbels few-flowered. Teeth of the calyx ovate, acutish. Corolla white, small; the segments oblong-lanceolate, spreading or reflexed. Berries globose, black when mature.

Old fields, waste places, and about houses; common. Introduced from Europe. July – August. This is a poisonous species. It differs in no important characters from the European plant.

3. SOLANUM CAROLINIANUM, *Linn.* *Horse-nettle.*

Herbaceous, prickly; leaves ovate-oblong, acute, often somewhat hastate, sinuate-angular, densely stellate-pubescent; racemes simple, loose.—*Linn. sp.* 1. *p.* 187; *Michx. fl.* 1. *p.* 150; *Dunal, Solan. p.* 227; *Pursh, fl.* 1. *p.* 156; *Ell. sk.* 1. *p.* 282; *Bart. fl. N. Am. t.* 23; *Torr. fl.* 1. *p.* 235; *Beck, bot. p.* 257; *Darlingt. fl. Cest. p.* 138.

Perennial. Stem 12 – 18 inches high, firm and somewhat woody, armed with sharp spreading prickles. Leaves 4 – 6 inches long, prickly along the midrib and larger veins on both sides: petioles about an inch long. Racemes lateral, few-flowered, opposite the leaves, and often exceeding them in length; the pedicels about half an inch long. Calyx prickly; the segments acuminate. Corolla large, bluish white; the lobes ovate-lanceolate, acute. Berries globose, orange-yellow.

Fields on Long Island, near Newtown (*Mr. Cooley*); Rye, Westchester county (*Dr. Mead*). *Fl.* Latter part of June – July. In some places this plant is a pernicious weed, and is very difficult to eradicate.

† *Atropa Belladonna* has been found by Dr. Bradley in Parma, Monroe county; but it had probably escaped from some garden.

ORDER LXXVIII. GENTIANACEÆ. *Juss.* THE GENTIAN TRIBE.

Calyx consisting usually of 4 or 5 (rarely 6 – 8) more or less united sepals. Corolla mostly funnelform or salverform, twisted in æstivation (or rarely induplicate); its lobes equal in number to the sepals. Stamens 4 – 5, inserted in the tube of the corolla. Ovary one-celled, but sometimes imperfectly or almost completely 2-celled; the two parietal placentæ being more or less introflexed, with numerous ovules: styles united or wanting: stigmas 2-lobed. Capsule many-seeded. Seeds small; the embryo straight, in the axis of fleshy albumen. — Herbs, usually bitter, with a watery juice, and almost always (except in MENYANTHEÆ) opposite and entire leaves. Flowers showy.

CONSPECTUS OF THE GENERA.

§ 1. True GENTIANACEÆ. *Æstivation of the corolla twisted.*

1. GENTIANA. Corolla tubular or funnelform, 4 – 5-cleft, without fringed glandular pits inside; the orifice naked. Stigma 2-lobed. Capsule 1-celled, 2-valved.
2. FRASERA. Corolla mostly 4- (sometimes 5-) cleft, rotate; the segments with glandular fringed pits in the middle. Style short, with two stigmas. Capsule 1-celled, 2-valved.
3. HALENIA. Corolla campanulate-rotate, 4-cleft; the segments spurred and glanduliferous at the base. Stigmas 2, nearly sessile. Capsule 1-celled, 2-valved.

4. ERYTHRÆA. Corolla tubular-funnelform; the limb short, 5- (or sometimes 4-) cleft. Anthers at length spirally twisted, opening longitudinally. Style straight: stigmas 2, roundish. Capsule oblong-linear, 1-celled or partly 2-celled.

5. BARTONIA. Flowers 4-parted; the segments erect. Corolla funnelform. Anthers not twisted after flowering. Stigma thick, glandular, sessile, 2-lobed. Capsule 1-celled, 2-valved.

6. SABBATIA. Flowers 5 – 12-parted. Anthers at length revolute. Stigmas 2, linear, finally spiral. Capsule 1-celled, 2-valved.

§ 2. MENYANTHEÆ. *Æstivation of the corolla induplicate.*

7. MENYANTHES. Corolla funnelform, 5-parted; the segments bearded inside. Capsule 1-celled, 2-valved. Leaves ternately divided.

8. LIMNANTHEMUM. Corolla somewhat rotate, 5-parted; the segments not bearded. Capsule 1-celled, 2-valved or valveless. Leaves cordate.

§ 1. GENTIANACEÆ proper. *Æstivation of the corolla twisted.*

1. GENTIANA. *Linn.; Endl. gen.* 3528; *Griseb. Gent. p.* 210. GENTIAN.

[Named from *Gentius*, a king of Illyria, who is said to have brought the ordinary medicinal species into use.]

Calyx 4 – 5-cleft. Corolla tubular-campanulate, funnelform or somewhat salver-shaped; the limb 4 – 5-cleft, often with intermediate teeth or secondary lobes (plicæ), without nectariferous glands. Filaments equal at the base. Styles 2, sometimes combined into one. Capsule 1-celled, 2-valved, sessile or stipitate; the stipe often elongated, and in some species nearly or quite exserted from the withered corolla.— Perennial or biennial herbs of various habit.

* CYANE, Ren. *Corolla somewhat tubular; the intermediate lobes or plicæ usually large: no glands at the base of the filaments: stigmas distinct, revolute: capsule stipitate: seeds often winged.*

1. GENTIANA SAPONARIA, *Linn.* (Plate LXXXI.) *Soap Gentian.*

Stem ascending; leaves ovate-lanceolate and obovate, rough on the margin; flowers aggregated, somewhat sessile, bracteate; lobes of the calyx about as long as the tube; corolla clavate, the lobes ovate, obtuse, twice as long as the (cleft) plicæ; anthers connate; seeds narrowly winged. *Griseb. in Hook. fl. Bor-Am.* 2. *p.* 55, *and Gent. p.* 286. *β? linearis:* leaves linear-lanceolate; the anthers at length distinct. *Griseb. l. c.* G. linearis, *Frœl. mon. Gent. p.* 37 (ex *Griseb.*); *Pursh, fl.* 1. *p.* 186. G. Pneumonanthe, *Michx. fl.* 1. *p.* 176; *Bigel. fl. Bost. p.* 105; *Torr. fl.* 1. *p.* 287; *Beck, bot. p.* 239, not of *Linn.* G. Pseudo-pneumonanthe, *Rœm. & Schult. syst.* 6. *p.* 146.

Root perennial. Stem terete, slender, simple, very smooth. Leaves 2 – 3 inches long, linear-lanceolate or almost linear, tapering to a point, slightly rough on the margin, the rest very smooth. Flowers 3 – 5 in a terminal fascicle, and one or more in the axils of the next pair of leaves below. Segments of the calyx linear-lanceolate, smooth on the margin. Corolla tubular-campanulate, about an inch and a quarter long, bright purplish blue; the orifice open; the lobes ovate: intermediate teeth or plaits scarcely one-third the length of the lobes, mostly entire, but sometimes unequally 2-cleft or notched. Anthers at first cohering, but finally distinct. Ovary oblong: styles short, distinct: stigmas revolute. Capsule stipitate. Seeds oblong, with a narrow wing all round.

Valleys of the Adirondack mountains, Essex county. *Fl.* Early in August. I have followed Hooker and Grisebach in referring this plant to *G. Saponaria* of Linnæus, though I still think it scarcely distinct from *G. Pneumonanthe*. I have never met with the broad-leaved forms described by these learned botanists.

2. GENTIANA ANDREWSII, *Griseb.* *Andrews's Gentian.*

Stem ascending; leaves ovate-lanceolate, acuminate, rough on the margin; flowers aggregated, nearly sessile, bracteate; lobes of the calyx shorter than the tube, ciliolate-rough; corolla clavate, with the orifice connivent, the plicæ somewhat 2-lobed and cut, larger than the nearly obliterated lobes of the corolla; anthers connate; seeds broadly winged. *Griseb. l. c.* G. Saponaria, *Frœl. Gent. p.* 32, ex *Griseb. Gent. p.* 287; *Bart. fl. N. Am. t.* 79; *Torr. fl.* 1. *p.* 286; *Bigel. fl. Bost. p.* 105; *Beck, bot. p.* 239; *Darlingt. fl. Cest. p.* 165.

Root biennial? Stem 12 – 18 inches high, erect, simple, smooth. Leaves about three inches long and an inch or more in breadth, 3-nerved, very smooth except on the margin, which is a little rough. Flowers crowded in a terminal fascicle or head, with one or two in axils of the upper pairs of leaves. Segments of the calyx ovate-lanceolate, about half the length of the tube, minutely ciliate. Corolla about an inch and a half long, tubular-ventricose, nearly closed at the orifice, bright blue, sometimes pale; the primary lobes very short or almost wanting, and the secondary ones or inner folds broad, semiovate. Anthers sagittate. Stigmas oblong-lanceolate, at length diverging or recurved. Capsule stipitate. Seeds oblong, with a distinct broad thick opake wing, which is obtuse at one end and rather acute at the other.

Low grounds and moist woods; frequent. September – October. The expanded corolla, represented in our plate 80, fig. 3, was incorrectly drawn with the primary lobes laciniate. They are sometimes, particularly in withered flowers, slightly 1- or 2-toothed. The secondary lobes or plicæ can easily be distinguished by their being opposite the stamens, whereas the primary ones alternate with them.

3. GENTIANA OCHROLEUCA, *Frœl.* *Ochroleucous Gentian.*

Stem ascending; leaves ovate-lanceolate and obovate, rough on the margin; flowers aggregated, sessile, bracteate; lobes of the calyx unequal, as long as the tube; corolla (ochroleucous) with the lobes acute; intermediate plicæ entire, acute, very short; anthers distinct; seeds not winged. *Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 56, *and Gent. p.* 288; *Frœl. Gent p.* 35; *Bot. mag. t.* 1531; *Pursh, fl.* 1. *p.* 185; *Ell. sk.* 1. *p.* 340; *Torr. fl.* 1. *p.* 286; *Beck, bot. p.* 239; *Darlingt. fl. Cest. p.* 165. G. Saponaria, *Michx. fl.* 1. *p.* 176 (ex *Griseb.*).

Leaves most frequently obovate, but often broadest at the base, or cordate-lanceolate. Corolla variable (*Griseb*).

On Long Island (*Dr. Eddy*); Yates county (*Dr. Sartwell*). I have no specimens of this species from within our limits, and suspect that what has been taken for it is one of the forms of *G. Andrewsii*.

** ARCTOPHILA, Griseb. *Corolla funnelform, without plicæ: no glands at the base of the filaments: stigmas distinct, revolute: capsule sessile: seeds globose, not winged.*

4. GENTIANA QUINQUEFLORA, *Lam.* *Five-flowered Gentian.*

Stem quadrangular, branched; leaves ovate-lanceolate, somewhat clasping, acute, 5-nerved; flowers pedicellate, in a rather loose terminal fascicle, and axillary; calyx about one-third the length of the corolla, the segments subulate and twice as long as the tube; corolla tubular-funnelform, 5-cleft, without plicæ, the lobes triangular and very setaceously acuminate. — *Lam. enc.* 2. *p.* 643; *Ell. sk.* 1. *p.* 341; *Torr. fl.* 1. *p.* 288; *Beck, bot. p.* 239; *Bot. mag. t.* 3496; *Grah. in Edinb. new ph. jour. Jan.* 1836; *Griseb. l. c. p.* 63, *& Gent. p.* 251. G. quinquefolia, *Linn. sp.* 1. *p.* 230. G. amarelloides, *Michx. fl.* 1. *p.* 175; *Pursh, fl.* 1. *p.* 186.

Root perennial? Stem about a foot high, often branching from the base, with prominent angles. Fascicles 3 – 5-flowered. Pedicels 4 – 6 lines long. Corolla nearly three-fourths of an inch long, pale blue, slightly ventricose, smooth. Stamens two-thirds as long as the corolla: anthers oblong. Stigmas 2, oblong, finally recurved. Capsule stipitate. Seeds roundish, not winged.

Woods and borders of rivers; north and west of Hudson; rare. September – October.

*** CRASSOPETALUM, Frœl. *Corolla fimbriate on the margin, without plicæ, with 4 – 5 glands near the base: stigmas broadly orbicular, distinct: capsule stipitate, or attenuate at the base: seeds scaly-hispid.*

5. GENTIANA DETONSA, *Friis.* (Plate LXXXII.) *Smaller Fringed Gentian.*

Stem strict; peduncles elongated, naked; leaves linear or linear-lanceolate, narrow at the base; corolla 4- (rarely 5-) lobed, the lobes without intermediate plicæ, oblong, rounded, ciliate on the sides, toothed at the summit; stigmas orbicular; seeds scaly-hispid. — *Friis in act. Hafn.* 10. *p.* 436. *t.* 1. *f.* 3, ex *Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 64, *& Gent. p.* 256. *β. barbata:* stem-leaves with a very long acumination, the radical ones spatulate; corolla larger. *Griseb. l. c.* G. barbata, *Frœl. Gent. p.* 114; *Sims, bot. mag. t.* 639. G. ciliata, *Pall. Ross.* 2. *t.* 92. *f.* 2 (all from *Griseb.*).

Root annual or biennial. Stem simple or somewhat branched, 8 – 12 inches or more high, mostly simple and 1 – 3-flowered. Leaves 1 – 2½ inches long and 2 – 3 lines wide. Peduncles elongated, angular. Segments of the calyx ovate-lanceolate, with a long acumination, rough on the midrib, less than half the length of the calyx. Corolla with the limb bright blue; the tube yellowish and white: lobes ciliate, but considerably less so than in *G. crinita*. Capsule attenuated at the base. Seeds hispid with little brown scales.

On wet limestone rocks, Goat Island, Niagara Falls (*Dr. Barratt*); at the same place, and near Irondequoit Mills (*Dr. Knieskern*). September. This species grows in various parts of British America; and I have received from Mr. Lapham, beautiful specimens which he collected in Wisconsin. Allied to the following species, but readily distinguished by the narrow leaves, and the smaller and much less fringed corolla.

6. GENTIANA CRINITA, *Frœl.* *Large Fringed Gentian.*

Stem branching, leafy; the branches elongated, naked above, one-flowered; leaves oblong-lanceolate or lanceolate, rounded or cordate at the base, upper ones acute, the radical and lower obovate, obtuse; flowers tetramerous; lobes of the corolla without intermediate pleæ, cuneate-obovate, conspicuously ciliate, particularly on the sides; stigmas roundish-ovate; seeds scaly-hispid. — *Frœl. Gent. p.* 112; *Bot. mag. t.* 2031; *Pursh, fl.* 1. *p.* 185; *Ell. sk.* 1. *p.* 341; *Bigel. fl. Bost. p.* 105; *Bart. fl. N. Am. t.* 80; *Torr. fl.* 1. *p.* 288; *Beck, bot. p.* 240; *Darlingt. fl. Cest. p.* 166; *Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 65, *and Gent. p.* 256. G. fimbriata, *Bot. rep. t.* 509.

Biennial or annual. Stem 1 – 2 feet high, erect, terete below, somewhat 4-angled above, branching at the summit. Radical leaves clustered, less than an inch long, obovate, and narrowed at the base: upper leaves about two inches long and 6 – 8 lines wide, obscurely nerved. Peduncles 2 – 5 inches long, quadrangular. Calyx smooth, acutely 4-angled; the angles winged: inner segments lanceolate; outer ones ovate, with a long tapering point; the midrib slightly rough. Corolla bright blue, about two inches long, beautifully fringed at the top and upper part of the sides. Anthers linear-oblong. Capsule tapering to a short stipe at the base. Seeds hispid with brown scales.

Woods, low grounds, etc.; frequent. September – October. A very beautiful plant, but a biennial or annual, and not easily raised from seed. It has, however, been cultivated in England.

2. FRASERA. *Walt. fl. Car. p.* 87; *Endl. gen.* 3534; *Griseb. Gent. p.* 328. FRASERA.

[In honor of JOHN FRASER, an indefatigable collector of North American plants.]

Flowers tetramerous. Corolla rotate, deciduous, deeply 4-parted, with one or two fringed glands on each lobe. Styles united: stigmas 2. Capsule 1-celled, compressed. Seeds few, large, winged, attached to the sutures of the valves. — Leaves opposite and whorled. Flowers in a terminal leafy panicle formed of numerous pedunculate cymules, and axillary in the upper part of the stem.

1. FRASERA CAROLINENSIS, *Walt.* *American Columbo.*

Stem smooth; leaves opposite and whorled; panicle elongated; calyx nearly as long as the corolla; glands oval-orbicular, one on each lobe of the corolla. — *Walt. fl. Car. p.* 87; *Pers. syn.* 1. *p.* 137; *Torr. fl.* 1. *p.* 187; *Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 66, *and Gent. p.* 329. F. Walteri, *Michx. fl.* 1. *p.* 67; *Pursh, fl.* 1. *p.* 101; *Ell. sk.* 1. *p.* 205; *Bart. veg. mat. med. t.* 35; *Beck, bot. p.* 241. F. verticillata, *Muhl. cat. p.* 17.

Root biennial. Stem 3 – 5 feet high, erect, obtusely 4-angled. Leaves oblong-lanceolate;

lower ones a foot long and 2 – 3 inches wide ; the upper gradually smaller. Flowers numerous, forming a long pyramidal leafy compound panicle. Pedicels from half an inch to an inch in length. Calyx deeply 4-parted ; the segments linear-lanceolate, acute. Corolla, when expanded, about an inch in diameter, greenish yellow speckled with purple, deeply 4-parted ; the segments ovate-lanceolate, acuminate, with a large oval beautifully fringed gland in the centre of each. Stamens shorter than the corolla : anthers large, oblong, yellow. Ovary sessile, attenuated above into a short style : stigma of two oblong finally spreading lobes. Capsule about three-fourths of an inch long, oval, much compressed. Seeds about six, one-fourth of an inch long, flattened, with a narrow winged border. Embryo minute, at the extremity of fleshy albumen : cotyledons oval : radicle short and thick.

On West-Canada creek (*Prof. J. Hadley*) ; Moscow, Livingston county (*Dr. Bradley*). Borders of lakes, New-York (*Pursh*). July. The root of this plant is esteemed a good bitter tonic. It is administered both in the form of powder and infusion. (See *Wood & Bache's U. S. Dispens. p.* 214.)

3. HALENIA. *Borkh. in Rœm. arch.* 1. *p.* 22, ex *Endl. gen.* 3535. HALENIA.

[Etymology uncertain.]

Calyx 4-parted. Corolla campanulate, 4-cleft ; the segments with a glanduliferous spur at the base. Stigma 2-lobed, nearly sessile. Capsule compressed, 1-celled, 2-valved, many- (or few-) seeded ; the seeds fixed to the sutures.— Herbs, with the flowers in terminal and axillary pedunculate cymules, which are more or less paniculate.

1. HALENIA DEFLEXA, *Griseb.* *Deflexed Halenia.*

Stem erect, leafy ; leaves 3 – 5-nerved ; radical ones oblong-spatulate, the base attenuated into a petiole as long as the lamina ; those of the stem oblong-lanceolate, acute, nearly sessile ; spurs cylindrical, obtuse, curved and descending, half the length of the corolla. *Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 67. *t.* 153, *& Gent. p.* 324. Swertia deflexa, *Sm. in Rees's cycl. ; Gold. in Edinb. phil. mag.* 6. *p.* 321 ; *Torr. fl.* 1. *p.* 186 ; *Beck, bot. p.* 240. S. corniculata, *Michx. fl.* 1. *p.* 97 ; *Pursh, fl.* 1. *p.* 100. S. Michauxiana, *Rœm. & Schult. syst.* 6. *p.* 130. S. Americana, *Spreng. syst.* 1. *p.* 861.

Biennial. Stem 12 – 18 inches high, 4-angled, simple or somewhat branched above. Leaves about an inch long. Flowers in terminal cymules ; the pedicels 3 – 8 lines long. Segments of the calyx lanceolate. Corolla blue ; the segments ovate, acuminate : horns descending and curved outwards. Stamens half as long as the corolla : anthers small, oval. Capsule elliptical, acute. Seeds oblong-cylindrical.

Borders of small lakes in the northern part of the State (*Prof. Hadley*). Very near *H. Sibirica.*

4. ERYTHRÆA. *Reneaulme*, ex *Endl. gen.* 3543; *Griseb. Gent. p.* 136. CENTAURY.

[From the Greek, *erythros*, red, which is the prevailing color of the flower in this genus.]

Calyx tubular, carinate-angular, 5-cleft. Corolla funnelform, withering: limb short, 5-cleft. Anthers at length spirally twisted. Style erect: stigmas 2, roundish. Capsule linear, partly 2-celled, 2-valved. Seeds very small. — Mostly small annuals, with dichotomously branching stems, and flowers in corymbose or fasciculate panicles.

1. ERYTHRÆA CENTAURIUM, *Pers.* *Common Centaury.*

Leaves ovate-oblong; flowers nearly or quite sessile, fasciculate-cymose; calyx rather more than half as long as the tube of the corolla.—*Pers. syn.* 1. *p.* 283; *Beck, bot. p.* 242; *Hook. Brit. fl.* (ed. 4.) *p.* 96; *Griseb. Gent. p.* 140. E. Pickeringii, *Oakes in Hovey's hort. mag. May*, 1841? Gentiana Centaurium, *Linn.; Engl. bot. t.* 417. Chironia Centaurium, *Willd. sp.* 1. *p.* 1067.

Annual. Stem 4 – 10 inches high, either nearly simple or branching corymbosely (often from the root upward), prominently 4-angled. Leaves in remote or approximate pairs, from half an inch to an inch or more in length and 3 – 5 lines wide, rather obtuse, 3-nerved. Inflorescence rather open; the cymes aggregated, and forming a sort of corymb. Calyx with five prominent angles; the segments subulate. Corolla about half an inch long; the tube a little contracted above the ovary: limb bright rose-color; the segments oblong, obtuse, erect-spreading. Stamens exserted: anthers linear-oblong. Style distinct, straight, slightly 2-cleft at the summit: stigmas large, roundish. Capsule somewhat compressed, rather acute; the margins of the valves inflexed nearly to the centre. Seeds very numerous and minute, roundish, reticulate-pitted.

Fields near the old French Fort, Oswego (*Dr. Aikin*); Putnam county. August.

2. ERYTHRÆA MUHLENBERGII, *Griseb.* *Muhlenberg's Centaury.*

Stem simple or branching; leaves ovate-oblong, rather obtuse; flowers in loose cymes, the dichotomal ones pedicellate; calyx (after flowering) about two-thirds the length of the corolla. —*Griseb. Gent. p.* 146. E. pulchella, *Darlingt. fl. Cest. p.* 126.

Annual. Stem 2 – 6 inches high, slender, sharply 4-angled. Leaves 4 – 6 lines long, 3-nerved. Cymes open and rather naked. Flowers about half as large as in the preceding species; the limb bright purple, rarely 4-parted; the lobes erect. Capsule with the valves introflexed half way to the centre.

Wet meadows, Flushing, Long Island. July. A *var.* of the preceding?

5. BARTONIA. *Muhl.* ex *Willd. in neue schrift. ges. nat. fr. Berol.* 3. *p.* 444 (1801); *Torr. fl.* 1. *p.* 85, not of *Pursh.* *BARTONIA.*

CENTAURELLA, *Michx.* CENTAURIUM, *Pers.* ANDREWSIA, *Spreng.*

[In honor of BENJ. F. BARTON, professor of botany in Philadelphia]

Calyx deeply 4-parted, appressed. Corolla somewhat campanulate, withering; the tube short: limb 4-parted, with nearly erect lobes. Style short: stigma 2-lobed; the lobes decurrent on the style. Capsule 1-celled, 2-valved. Seeds numerous, minute. — Small slender annual plants, with minute scale-like leaves and terminal flowers.

1. BARTONIA TENELLA, *Muhl.* *Late-flowered Bartonia.*

Stem paniculately branched, strict, many-flowered; peduncles opposite; style much shorter than the ovary. — *Muhl. l. c.; Pers. syn.* 1. *p.* 141; *Torr. fl.* 1, *p.* 185. B. paniculata, *Muhl. cat. p.* 15; *Darlingt. fl. Cest. p.* 111. Saguia Virginica, *Linn. sp.* 1. *p.* 128; *Willd. sp.* 1. *p.* 719. Centaurella paniculata, *Michx. fl.* 1. *p.* 98. *t.* 12. *f.* 1; *Ell. sk.* 1. *p.* 204; *Bigel. fl. Bost. p.* 52; *Beck, bot. p.* 243. C. autumnalis, *Pursh, fl.* 1. *p.* 110; *Griseb. Gent. p.* 308. Centaurium autumnale, *Pers. l. c. p.* 137. Andrewsia paniculata, *Spreng. anleit. kenn. gew. p.* 474, ex *Bart. fl. Phil.* 1. *p.* 89; *fl. N. Am. t.* 53. *f.* 2.

Stem slender and wiry, 4-angled, 3 – 10 inches or more in height, of a yellowish-green color, often twisted. Leaves subulate, rigid, scarcely an eighth of an inch long, closely appressed, opposite or nearly so. Flowers mostly opposite and terminating the branches; the pedicels 2 – 3 lines long. Calyx about two-thirds the length of the corolla; the segments linear-lanceolate. Corolla pale greenish yellow, less than 2 lines long; the segments oblong, rather acute or obtuse. Stamens included. Ovary 4-sided: style covered on two opposite sides with the decurrent lobes of the stigma. Seeds extremely numerous.

Sterile moist grounds, and in dry swamps. August – September. The original name of this plant is employed, because it is the oldest; and besides, the BARTONIA of Pursh and Nuttall is now merged in MENTZELIA. (See *Torr. & Gr. fl. N. Am.* 1. *p.* 532.)

6. SABBATIA. *Adans. fam. fl.* 2. *p.* 503; *Endl. gen.* 3546. *AMERICAN CENTAURY.*

[Named after LIBERATUS SABBATI, an Italian botanist of the last century.]

Calyx deeply 5- (rarely 8 – 12-) parted; the segments narrow. Corolla somewhat rotate, 5- (or 8 – 12-) parted. Stamens 5 – 12: anthers at length revolute. Ovary one-celled: style short: stigmas linear, spirally twisted after flowering. Capsule 2-celled, 2-valved; the sutures introflexed, bearing the 2-lobed placentæ. Seeds very numerous. — Smooth herbs, with corymbose flowers.

1. SABBATIA STELLARIS, *Pursh.* *Salt-marsh Centaury.*

Stem somewhat angular, sparingly and dichotomously branched; the branches elongated, one-flowered; leaves lanceolate and obovate-lanceolate, rather acute; segments of the calyx linear-subulate, about half as long as the obovate segments of the corolla. — *Pursh, fl.* 1. *p.* 137; *Torr. fl.* 1. *p.* 217; *Beck, bot. p.* 241; *Griseb. Gent. p.* 122. S. gracilis, *Ell. sk.* 1. *p.* 284. Chironia stellata, *Muhl. cat. p.* 23?

Biennial. Stem usually about a foot high, often branching from near the root, marked with prominent lines which descend from the bases of the leaves. Lower leaves obovate-spatulate, narrowed into a short petiole at the base: upper leaves about an inch long, varying from narrowly lanceolate to ovate-lanceolate. Flowers at the extremity of the long branches, forming a loose corymb. Tube of the calyx turbinate; the segments sometimes two-thirds as long as the corolla, narrow and very acute. Corolla bright rose-color, with a yellow star in the centre, surrounded with a deep red border. Anthers linear; the cells opening longitudinally. Style elongated after flowering: stigmas very long, at first erect, finally twisted.

Brackish marshes in the neighborhood of New-York and on Long Island. *Fl.* August – September. On the borders of sandy swamps, this species is sometimes only from one to three inches high, and the stem one-flowered.

2. SABBATIA ANGULARIS, *Pursh.* (Pl. LXXXIII.) *American Centaury.*

Stem acutely 4-angled, somewhat winged; leaves ovate, clasping; peduncles elongated, corymbed; segments of the calyx lanceolate, much shorter than the obovate-elliptical lobes of the corolla, the tube 5-angled.—*Pursh, fl.* 1. *p.* 137; *Ell. sk.* 1. *p.* 285; *Torr. fl.* 1. *p.* 218; *Beck, bot. p.* 241; *Darlingt. fl. Cest. p.* 125; *Hook. fl. Bor.-Am.* 2. *p.* 70; *Griseb. Gent. p.* 124. Chironia angularis, *Linn. sp.* 1. *p.* 190; *Walt. fl. Car. p.* 95; *Michx. fl.* 1. *p.* 146.

Biennial. Stem erect, 1 – 2 feet high, with numerous opposite branches. Leaves about an inch long, closely embracing the stem and slightly connate at the base, acute or obtuse, indistinctly 5-nerved. Calyx usually less than half the length of the corolla; the segments somewhat carinate, acute. Corolla rose-colored, with a yellowish-green 5-rayed star in the centre. Capsule oblong-ovoid, obtuse, mucronate. Seeds very numerous.

Old fields, copses, etc.; frequent in the southern part of the State, but not found in the interior. *Fl.* July – August. This plant, like most others of the order, is very bitter, and is used in domestic practice as a tonic. (See *Wood & Bache, U. S. Dispens. p.* 565.)

3. SABBATIA CHLOROIDES, *Pursh.* (Pl. LXXXIV.) *Large-flowered Sabbatia.*

Stem somewhat angular, with few one-flowered elongated branches; leaves lanceolate, erect; flowers 7 – 12-parted; segments of the calyx linear, less than half the length of the

elliptical-lanceolate lobes of the corolla. — *Pursh, fl.* 1. *p.* 138; *Ell. sk.* 1. *p.* 286; *Torr. fl.* 1. *p.* 218; *Bigel. fl. Bost. p.* 76; *Beck, bot. p.* 242; *Griseb. Gent. p.* 124. Chlora dodecandra, *Linn. sp.* 1. *p.* 190. Chironia chloroides, *Michx. fl.* 1. *p.* 147.

Biennial. Stem 1 – 2 feet high, sometimes simple and one-flowered, but usually more or less branched and bearing from 3 to 10 flowers. Radical leaves obovate-spatulate: upper ones lanceolate, 1 – 2 inches long, acute or obtuse. Flowers often two inches in diameter. Corolla bright rose-color; the segments rather acute or obtuse.

Brackish bog meadows on the Island of New-York, and on Long Island. August. A very showy plant.

§ 2. MENYANTHEÆ, Endl. *Æstivation of the corolla induplicate.*

7. MENYANTHES. *Linn.; Endl. gen.* 3564; *Griseb. Gent. p.* 340. *BUCKBEAN.*

[So named from the Greek, *mene*, a month, and *anthos*, a flower; in allusion to its emmenagogue virtues.]

Calyx 5-parted. Corolla funnelform, 5-cleft; the border spreading, 5-lobed, hairy inside. Style filiform: stigma capitate, 2-lobed. Capsule 1-celled: placentæ in the middle of the valves (loculicidal).—An herbaceous plant, growing in swamps, with a creeping rhizoma, ternately divided leaves, and the flowers in a simple raceme.

1. MENYANTHES TRIFOLIATA, *Linn.* *Buckbean. Marsh Trefoil.*

Linn. sp. 1. *p.* 145; *Engl. bot. t.* 495; *Michx. fl.* 1. *p.* 125; *Pursh, fl.* 1. *p.* 139; *Bigel. fl. Bost. p.* 77, *and med. bot. t.* 46; *Torr. fl.* 1. *p.* 214; *Beck, bot. p.* 244; *Hook. fl. Bor.-Am.* 2. *p.* 70; *Griseb. l. c.*

Perennial. Rhizoma thick, creeping horizontally to a considerable distance, marked at intervals with scars left by the former petioles. Leaves on long petioles, which are sheathing at the base: leaflets obovate, obscurely toothed or nearly entire. Peduncles scape-like, ascending, longer than the leaves. Raceme 10 – 15-flowered; the pedicels thick, straight; lower ones about half an inch long. Calyx much shorter than the corolla; the segments oblong, obtuse. Corolla white tinged with red, beautifully bearded with white hairs on the inside. Stamens scarcely half the length of the corolla: anthers oblong-sagittate. Style exserted, persistent: stigma 2-lobed. Capsule ovoid. Seeds numerous, minute, rough.

Swamps and margins of ponds; not common. May. A popular as well as officinal medicine. It is tonic, diuretic or purgative, according to the dose; and has been employed in intermittents, chronic rheumatism, etc.

8. LIMNANTHEMUM. *S. P. Gmel. in act. acad. Petrop.* 15. *p.* 567. *t.* 17. *f.* 2 (1769), ex *Endl.*; *Griseb. Gent. p.* 341.

VILLARSIA, *Vent., R. B., Endl.* VILLARSIA & LIMNANTHEMUM *Gmel.*

[From the Greek, λίμνη, a marsh, and ἄνθεμον, a flower; in allusion to its place of growth.]

Calyx 5-parted. Corolla somewhat rotate, 5-parted; the lobes bearded or scaly at the base; the upper part usually smooth. Stamens 5, alternating with five glands which are inserted in the throat of the corolla. Ovary roundish; the sutures not introflexed: ovules rather numerous or few. Style single or none: stigma small, 2-lobed. Capsule one-celled, 2-valved, or obscurely valved and opening (regularly or irregularly) only in decay. Seeds rather numerous or few.—Floating or marsh plants, with simple, often cordate or somewhat peltate leaves. Flowers in fasciculate umbels, either produced from the upper part of the petiole near the leaf, or forming a terminal panicle, yellow or rarely white.

1. LIMNANTHEMUM LACUNOSUM, *Griseb.* *Floating Heart.*

Floating; leaves reniform-cordate, smoothish above, spongy-rough underneath, deeply cloven at the base; flowers (white) fasciculate, produced from the petiole near the leaf; glands of the corolla stipitate; style none; capsule scarcely as long as the calyx; seeds muricate.—*Griseb. in Hook. fl. Bor.-Am.* 2. *p.* 71, *and Gent. p.* 347. Villarsia lacunosa, *Vent. choix, p.* 9?; *Torr. fl.* 1. *p.* 214; *Bigel. fl. Bost. p.* 78, excl. syn.?; *Graham in Edinb. new phil. jour. Oct.* 1828. V. cordata, *Ell. sk.* 1. *p.* 215.

Stem prostrate and rooting in mud at the bottom of the water, about as thick as a goose-quill. Leaves about an inch long, rather fleshy, exactly cordate or somewhat reniform; the sinus at the base either narrow or open, very entire or obscurely crenate: lobes somewhat acute, bright green above, and variegated with white spots; the lower either pale or purplish, roughened with minute spongy granulations: petiole elongated according to the depth of the water, bearing about half an inch below the leaf a cluster of unequal one-flowered peduncles, and (usually) a number of slender conical (often elongated) root-like tubers which are capable of producing new plants. One or more of the flowers rise above the surface at a time, and fade in a day or two; then ripen their fruit under water. Calyx deeply 5-parted; the segments ovate-lanceolate, rather acute. Corolla pure white, about one-third of an inch in diameter; the segments obovate, slightly emarginate, undulate on the margin; the central part pubescent in lines near the extremity: throat yellow. Stamens less than half the length of the corolla, and inserted into its tube: anthers oblong: glands alternating with the stamens, and inserted lower down, yellow, hairy. Ovary ovoid, a little compressed, surrounded at the base with a 5-lobed glandular disk: stigma small, 2-lobed. Capsule covered with the connivent calyx-lobes, ovoid: placentæ 2 (rarely 3), each bearing 6 – 10 roundish compressed rough seeds.

Ponds and lakes; frequent. July – August. The germination of this plant is very re-

markable, and a full account of it is given by Grisebach in the Annals of Natural History, for March, 1838. One of the cotyledons remains in the seed, and is connected with the radicle by a short petiole; the other is furnished with a very long petiole, from which, at its upper part, other petioles and true roots arise, the proper radicle perishing early. One of the petioles attains a greater length than the others, and from its upper part flowers and roots are put forth.

ORDER LXXIX. APOCYNACEÆ. *Juss.; R. Br.* THE DOGBANE TRIBE.

Calyx 5-cleft, persistent. Corolla regular, 5-lobed, twisted in æstivation. Stamens 5: filaments distinct: anthers 2-celled, opening longitudinally, sometimes slightly connected: pollen granular. Ovaries 2, distinct or rarely united; the styles or stigmas combined into one, in fruit usually forming two follicles. Seeds often with a tuft of hairs at one or both ends, albuminous. — Trees, shrubs, or rarely perennial herbs, with a milky juice, mostly with opposite entire leaves, destitute of stipules, and the flowers cymose or paniculate.

1. APOCYNUM. *Linn.; Endl. gen.* 3422. *DOG'S-BANE.*

[From the Greek, *apo*, far from, and *kyon*, a dog; it being thought poisonous to that animal.]

Calyx 5-parted; the lobes not glandular, acute. Corolla campanulate; the lower part furnished with five adnate triangular nectariferous scales, which are opposite the lobes. Stamens inserted at the base of the corolla: filaments ligulate, pubescent inside, alternating with the scales: anthers sagittate, with an acute cartilaginous summit, adhering by their face to a narrow zone near the middle of the stigma. Ovaries 2, oblong: stigma nearly sessile, ovoid, obtuse, obscurely 2-lobed. Follicles slender, elongated. Seeds numerous, with a long coma at the summit. — Perennial herbs, with opposite entire leaves, and the flowers in terminal and axillary paniculate cymes.

1. APOCYNUM ANDROSÆMIFOLIUM, *Linn.* *Dog's-bane. Black Indian-hemp.*

Leaves ovate, mostly obtuse at the base; lobes of the calyx ovate-lanceolate, acute, about half as long as the tube of the corolla; limb of the corolla spreading. — *Linn. sp.* 1. *p.* 213; *Michx. fl.* 1. *p.* 121; *Bot. mag. t.* 280; *R. Br. in Wern. trans.* 1. *p.* 68; *Bigel. med. bot. t.* 36, *and fl. Bost. p.* 99; *Ell. sk.* 1. *p.* 314; *Torr. fl.* 1. *p.* 275; *Beck, bot. p.* 233; *Darlingt. fl. Cest. p.* 167; *Griscom in Amer. jour. med. sc. May*, 1833, with a figure.

Stem 2 – 3 feet high, smooth, with numerous spreading branches. Leaves 2 – 3 inches long, acute, mucronate, smooth above, more or less pubescent (sometimes white and almost velvety) underneath : petiole one-fourth of an inch long. Flowers in rather loose paniculate cymes, which are terminal, and axillary in the upper part of the stem : pedicels 2 – 3 lines long, with subulate bracts at the base. Calyx smooth. Corolla (as in the rest of the genus, with a twisted æstivation to the left) white or pale rose-color, with reddish stripes ; the nectariferous scales at the base free only at the tip : limb somewhat spreading ; the lobes ovate, obtuse. Follicles about four inches long, terete, tapering to a point. Seeds crowned with a silky pappus.

Borders of woods and along fences ; common. June – July. This and the following species are emetic, cathartic or diaphoretic, according to the dose (See *Wood & Bache's U. S. Dispens. p.* 98). They are extensively used by the Thomsonian doctors as a mild emetic, under the names of *American Ipecac*, *Bitter-root*, and *Wandering Milkweed* (*Dr. Knieskern*).

2. Apocynum cannabinum, *Linn.* *Indian Hemp.*

Leaves varying from oblong to lanceolate, mostly acute at each end ; lobes of the calyx lanceolate, nearly as long as the tube of the corolla ; limb of the corolla erect.—*Linn. sp.* 1. *p.* 213 ; *R. Br. l. c. p.* 68 ; *Michx. fl.* 1. *p.* 122 ; *Pursh, fl.* 1. *p.* 179 ; *Ell. sk.* 1. *p.* 179 ; *Torr. fl.* 1. *p.* 276 ; *Bigel. fl. Bost. p.* 100 ; *Beck, bot. p.* 234 ; *Darlingt. fl. Cest. p.* 168 ; *Hook. fl. Bor.-Am.* 2. *p.* 51. *t.* 139. A. pubescens, *R. Br. l. c.? ; Ell. l. c. ; Torr. l. c. ; Beck, l. c.*

Stem 2 – 3 feet high, sometimes oblique or even decumbent, but usually erect. Leaves 2 – 4 inches long and varying from two inches to less than half an inch wide, usually smoothish underneath, but often more or less pubescent, never hoary, mucronate ; the lowest ones often somewhat cordate at the base : petiole 2 – 3 lines long. Cymes mostly terminal, rather crowded, either shorter or longer than the leaves. Flowers only about half as large as in the preceding species, but very similar in their structure. Corolla greenish white. Follicles about four inches long, very slender.

Borders of fields and woods, and on the banks of rivers ; not so common as *A. androsæmifolium*. *Fl.* July – August. I suspect that *A. hypericifolium* of Aiton is nothing more than a variety of this species, but I have never seen the leaves so nearly sessile as they are represented by Hooker in *fl. Bor.-Am. t.* 140.

Order LXXX. ASCLEPIADACEÆ. *R. Br.* The Milkweed Tribe.

Calyx 5-parted, persistent. Corolla regular, 5-lobed, deciduous, the æstivation contorted; the throat naked, or often furnished with five appendages which adhere to the connate filaments, forming a crown (*nectary*, Linn.; *lepanthium*, Nutt.). Stamens 5, inserted into the base of the corolla: filaments mostly connate, and surrounding the pistil: anthers erect, introrse, 2-celled or incompletely 4-celled: pollen, when the anther bursts, cohering into wax-like masses, which are as numerous as the cells, or confluent by pairs, and finally adhering through the intervention of the corpuscles and their arms to the five angles of the stigma, by twos, by fours, or singly. Ovaries 2: styles 2, approximated: stigma single, common to both styles, large and fleshy, 5-angled; the angles alternating with the stamens, each of them bearing a small cloven cartilaginous gland (*corpuscle*), with its two descending arms or processes. Follicles 2, one of which is sometimes abortive. Seeds numerous, compressed, imbricated, usually margined, with a long silky coma at the summit. Embryo straight, with foliaceous cotyledons. Albumen thin. — Herbaceous or shrubby lactescent plants, with mostly opposite entire leaves. Stipules none, but hairs in their place between the leaves. Inflorescence umbellate, racemose or corymbose; the peduncles proceeding from between the leaves.

For an account of the manner in which fecundation is effected in this singular order, see Mr. Brown's admirable paper in the 16th volume of the Linnæan Transactions.

1. ASCLEPIAS. *Linn.; Endl. gen.* 3490; *Decaisne in DC. prodr.* 8. *p.* 564.

SILKWEED. SWALLOW-WORT.

[The Greek name of *Æsculapius*, to whom the genus is dedicated.]

Calyx deeply 5-parted; the segments lanceolate, spreading. Corolla rotate, deeply 5-parted; the lobes lanceolate, refracted. Staminal crown seated on the tube of the stamens, and consisting of five cucullate lobes, each producing from its base a horn-like or subulate averted process. Anthers with a membranaceous appendage at the summit. Pollen-masses 5 distinct pairs, pyriform, compressed, suspended by their attenuated summit in the cells of the anthers. Stigma depressed. Follicles smooth, or muricate with soft spines.—Perennial herbs, with opposite (rarely verticillate or alternate) leaves. Umbels between the petioles. Roots thick and creeping, very tenacious of life.

* *Follicles muricate with soft spines.*

1. ASCLEPIAS CORNUTI, *Decaisne.* *Silkweed. Milkweed.*

Stem mostly simple, thick, nearly smooth; leaves ovate-elliptical, obtuse or with a short abrupt point, velvety pubescent underneath, the petioles short; umbels lateral and terminal, somewhat nodding, many-flowered; lobes of the crown ovate, the margin 2-toothed at the base; horn as long as the lobe.—*Decaisne in DC. prodr.* 8. *p.* 564. A. Syriaca, *Linn. sp.* 1. *p.* 214; *Pursh, fl.* 1. *p.* 181; *Torr. fl.* 1. *p.* 273; *Bigel. fl. Bost. p.* 101; *Beck, bot. p.* 235; *Darlingt. fl. Cest. p.* 169; *Hook. fl. Bor.-Am.* 2. *p.* 52. A. Syriaca, *β., Michx. fl.* 1. *p.* 114. A. Syriaca, *β.* Illinoensis, *Pers. syn.* 1. *p.* 275.

Root long and fleshy, branching. Stem 3 – 4 feet high, erect. Leaves 4 – 8 inches long and 2 – 3 inches wide, nearly smooth above, whitish pubescent underneath. Umbels 2 – 3, or sometimes rather numerous, each bearing from 50 to 100 flowers; the pedicels an inch or more in length, hairy. Flowers sweet-scented. Calyx about half as long as the corolla, hairy; the lobes lanceolate. Corolla dull greenish purple, sometimes pale; the segments oblong-lanceolate, at first spreading, but soon turned downward. Stamineal crown erect-spreading; the lobes thick and fleshy, concave, the margin 1- (or sometimes 2-) toothed on each side: horn curved, broad at the base and sharp-pointed, resembling the claw of a cat, the point just reaching the margin of the stigma. Stamens closely surrounding the pistils; the filaments united into a tube: anthers united to the stigma at the upper part, 2-celled on the inside, with a projecting wing-like cartilaginous margin or appendage, which is broader below; a longitudinal chink appearing between the margins of each contiguous pair of anthers. Pollen-masses yellowish and waxy, suspended by pairs in the cells of the anthers; each pair being lodged in the cells of two adjoining anthers, and connected with the arms or processes of the gland: terminal membrane of the anthers inflexed over the top of the stigma. Ovaries 2, tapering into short styles, which are surmounted by a large 5-angled stigma, to the angles of which are attached the glands with their processes. In the young flower-bud, the pollen-masses are quite unconnected with the stigma; but before the expansion of the flower, they become firmly united with the arms of the glands or corpuscles. Follicles 3 – 5 inches long and an inch or more in diameter, erect, woolly, of a papery texture, ventricose and acuminate, armed with flexible spines about one-fourth of an inch long. Seeds closely imbricated, flat, ovate, with a winged margin, crowned with a tuft of long white silky hairs.

Old fields and road-sides; common. June – July. I have followed Decaisne in changing the name of this species, it not being a native of Syria as was once supposed. It has, however, become naturalized in some parts of Europe. The silky hair of the seeds is sometimes used for beds, as a substitute for feathers. The young shoots are said to resemble asparagus. Dr. Knieskern informs me that the dried leaves are employed in preparing the indigo dye in woollen manufactories.

** *Follicles smooth.*

† *Leaves opposite.*

2. ASCLEPIAS PURPURASCENS, *Linn.* (Pl. LXXXV.) *Purple Silkweed.*

Stem simple, with two opposite lines of pubescence; leaves ovate-elliptical, acute, mucronate, abruptly attenuated into a short petiole, smoothish above, softly pubescent and pale underneath; peduncles and pedicels pubescent on one side; lobes of the crown oblong, abruptly narrowed above, nearly twice as long as the stamineal column; horn broadly falcate, with the acuminate point horizontal, much shorter than the lobe. — *Linn. sp.* 1. *p.* 214; *Pursh, fl.* 1. *p.* 181; *Bigel. fl. Bost. p.* 103; *Beck, bot. p.* 235; *Decaisne in DC. prodr.* 8. *p.* 564. A. amœna, *Michx. fl.* 1. *p.* 118; *Nutt. gen.* 1. *p.* 166; *Darlingt. fl. Cest. p.* 69.

Stem 2 – 3 feet high, erect, rather slender. Leaves 3 – 5 inches long and $1\frac{1}{2}$ – $2\frac{1}{2}$ inches wide, soft and almost velvety underneath; the midrib on the upper surface of a purplish color. Umbels 10 – 25-flowered, usually two at the summit of the stem, but there are often two or more lateral ones, about half as long as the leaves: peduncles 1 – 2 inches and the pedicels about one inch in length. Flowers erect. Calyx less than half the length of the corolla; the segments lanceolate. Corolla dark crimson-purple; the lobes oblong-lanceolate, acute. Lobes of the crown purplish, abruptly acuminate, but obtuse at the summit; the horn very broad at the base, with a narrow point which is bent at a right angle toward the stigma. Stamens, style and ovaries nearly as in the preceding species. Follicles oblong, tapering to a point, erect, smooth.

Borders of woods, and thickets; not uncommon in the southern part of the State, but I have not met with it in the northern or western counties. July. This species is easily distinguished at a distance by its deep purple flowers; but its most remarkable character is the broad abruptly bent horn of the stamineal crown. *A. amœna* of Michaux seems to be the same as this plant, as far as the description goes; but there are no specimens of it in his herbarium.

3. ASCLEPIAS PHYTOLACCOIDES, *Pursh.* *Poke-leaved Milkweed.*

Stem simple, with 2 opposite lines of pubescence, elliptical-oblong, acuminate at each end, petiolate, smooth above, somewhat pubescent underneath; umbels loosely flowered, on long peduncles; pedicels slender; lobes of the crown truncated obliquely outward, the inflexed margins 2-toothed at the summit; horn much exserted, with a long subulate curved point. — *Pursh, fl.* 1. *p.* 180; *Ell. sk.* 1. *p.* 319; *Nutt. gen.* 1. *p.* 166; *Bigel. fl. Bost. p.* 102; *Torr. fl.* 1. *p.* 280; *H. H. Eaton in Transylv. jour. med.* 1832; *Beck, bot. p.* 235; *Darlingt. fl. Cest. p.* 171; *Decaisne in DC. prodr.* 8. *p.* 565. A. exaltata, *Muhl. cat. p.* 37. A. nivea, *Hook. fl. Bor.-Am.* 2. *p.* 53, not of *Linn.?*

Stem 3 – 6 feet high, rather slender. Leaves 6 – 8 inches long and 2 – 3 inches wide, thin, on petioles about half an inch long. Umbels lateral and terminal, somewhat nodding,

15 – 30-flowered : peduncle 2 – 3 inches long : pedicels about an inch and a half long, pubescent on one side. Segments of the calyx lanceolate. Corolla greenish white, often tinged with purple ; the segments oblong, rather acute. Staminеal crown stipitate on the contracted tube of the filaments ; the lobes erect, short and truncate ; the inner margin with an acute tooth on each side, and two or more shorter teeth on the summit : horn with the exserted slender point curved over the summit of the stigma. Follicles lanceolate, acuminate, 4 – 6 inches long, minutely pubescent.

Moist rocky soils and bushy places ; not common. June – July.

4. Asclepias obtusifolia, *Michx.* *Waved-leaved Milkweed.*

Stem simple, somewhat flexuous, smooth and glaucous ; leaves oblong, obtuse, waved, sessile, somewhat cordate and clasping, glaucous underneath, transversely and reticulately veined ; umbel usually solitary, on a long terminal peduncle, densely many-flowered ; lobes of the crown truncate, toothed at the summit ; horns exserted, with a long subulate point. — *Michx. fl.* 1. *p.* 115 ; *Pursh, fl.* 1. *p.* 182 ; *Ell. sk.* 1. *p.* 321 ; *Bigel. fl. Bost. p.* 102 ; *Torr. fl.* 1. *p.* 281 ; *Beck, bot. p.* 236 ; *Darlingt. fl. Cest. p.* 170 ; *Decaisne in DC. prodr.* 8. *p.* 565.

Stem 2 – 3 feet high. Leaves 3 – 5 inches long and about 2 inches wide, usually obtuse and often emarginate, but with a slight point at the extremity ; the two lower pairs sometimes closely approximated. Peduncle 6 – 12 inches long. Umbel many-flowered ; the flowers larger than in any other of our species. Calyx ovate-lanceolate. Corolla 4 – 5 times longer than the calyx, greenish purple ; the lobes oblong. Tube of the stamens rather conspicuous. Lobes of the crown more or less toothed at the summit, one-third longer than the stigma : horn distinctly exserted. Follicles about four inches long, smoothish, rather slender.

Sandy woods and fields. Long Island ; in the valley of the Hudson ; and north as far as Washington county. June – July.

5. Asclepias variegata, *Linn.* (Pl. LXXXVI.) *Variegated Silkweed.*

Stem simple, with two opposite lines of pubescence ; leaves ovate or obovate, somewhat waved, rather thick, attenuated at the base into a petiole, smooth ; umbels on short peduncles, the peduncles and pedicels woolly ; lobes of the crown nearly orbicular, without teeth ; horn broadly lunate, with a horizontal point. — *Linn. sp.* 1. *p.* 215 ; *Bot. mag. t.* 1182 ; *Pursh, fl.* 1. *p.* 181 ; *Ell. sk.* 1. *p.* 317 ; *Nutt. gen.* 1. *p.* 167 ; *Torr. fl.* 1. *p.* 280 ; *Beck, bot. p.* 236 ; *Darlingt. fl. Cest. p.* 170 ; *Hook. fl. Bor.-Am.* 2. *p.* 52. *t.* 141 ; *Decaisne in DC. prodr.* 8. *p.* 565. A. hybrida, *Michx. fl.* 1. *p.* 115. A. citrifolia, *Jacq. coll.* 2. *p.* 290, *and ic. rar. t.* 343, ex *Decaisne.*

Stem about two feet high, sometimes with a short solitary branch near the summit, obtusely 4-sided. Leaves 3 – 4 inches long ; the lowest obovate ; upper ones ovate or oblong, obtusish or with a short acumination ; the veins horizontal and reticulated. Umbels 1 – 4, terminal and in the upper part of the stem, densely flowered. Corolla white or slightly tinged with purple, greenish externally. Staminеal crown white, purplish at the base : lobes twice as

long as the stigma. Follicles 4 – 5 inches long, lanceolate, acuminate, slightly pubescent.

Dry woods; rather common on Long Island and on the Island of New-York. June – July. This is a beautiful species; the compact umbels of nearly white flowers, much resembling those of Hoya.

6. Asclepias quadrifolia, *Jacq.* *Four-leaved Silkweed.*

Stem simple, slender, smooth; leaves ovate, petiolate, the upper and lower ones opposite, the four larger ones verticillate, near the middle of the stem; umbels usually two, terminal, erect, loose; pedicels capillary; lobes of the crown oblong, 2-toothed on the margin, the horn very short. — *Jacq. obs. t.* 33, ex *Pursh, fl.* 1. *p.* 183; *Ell. sk.* 1. *p.* 319; *Nutt. gen.* 1. *p.* 167; *Bart. fl. N. Am. t.* 43; *Torr. fl.* 1. *p.* 283; *Bigel. fl. Bost. p.* 104; *Beck, bot. p.* 236; *Darlingt. fl. Cest. p.* 172; *Hook. fl. Bor.-Am.* 2. *p.* 54; *Decaisne in DC. prodr.* 8. *p.* 566.

Stem about a foot and a half high. Leaves smooth, thin, usually 8 or 10 in number; the lowest pair, when present, often very small and obovate; the next above ovate and obtuse; the four larger ones are verticillate and acute, and may be regarded as two closely approximated pairs; the two uppermost are opposite, and narrower than the others. Umbels on slender peduncles, sometimes solitary, many-flowered. Flowers scarcely half as large as in *A. Cornuti*. Corolla and crown white or pale purple: lobes of the latter about twice as long as the stigma. Follicles 3 – 5 inches long, lanceolate-linear, acute, smooth.

Dry woods and rocky hills, commonly in rich soils. June.

7. Asclepias incarnata, *Linn.* *Swamp Silkweed.*

Stem somewhat corymbosely branched above, more or less pubescent; leaves oblong-lanceolate, pubescent, on short petioles; umbels numerous, erect, mostly in pairs and terminal; lobes of the crown oblong, scarcely exceeding the stigma, not toothed; horn subulate, exserted. — *Linn. sp.* 1. *p.* 215; *Michx. fl.* 1. *p.* 115; *Pursh, fl.* 1. *p.* 181; *Ell. sk.* 1. *p.* 320; *Bot. reg. t.* 250; *Torr. fl.* 1. *p.* 281; *Beck, bot. p.* 235; *Darlingt. fl. Cest. p.* 172; *Hook. fl. Bor.-Am.* 2. *p.* 53; *Decaisne in DC. prodr.* 8. *p.* 567. A. pulchra, *Ehrh.; Willd. sp.* 1. *p.* 1207; *Bigel. fl. Bost. p.* 163; *Sweet, Brit. fl. gard.* (ser. 2.) *t.* 18.

Stem 2 – 4 feet high, with erect branches, either nearly smooth (except two pubescent lines), or hairy-tomentose. Leaves 3 – 6 inches long, smoothish above, more or less pubescent (sometimes woolly) underneath, very acute; the base obtuse or somewhat cordate: petioles 3 – 5 lines long. Umbels on hairy peduncles: pedicels three-fourths of an inch long. Flowers half as large as in *A. Cornuti*. Corolla bright purple (or sometimes pale); the lobes lanceolate. Lobes of the crown truncated obliquely inward: horns erect, slightly curved. Tube of the stamens contracted into a slender neck under the crown. Follicles linear-lanceolate, acuminate, pubescent.

Low grounds, particularly on the borders of brackish marshes, but not confined to the seaboard; common. July – August. This is the most abundant species next to *A. Cornuti*. It affords but little milky juice when wounded. It is sometimes employed in domestic practice, and is considered anodyne and diaphoretic. (See *Wood & Bache, U. S. disp. p.* 117.)

†† *Leaves alternate or verticillate.*

8. Asclepias tuberosa, *Linn.* *Pleurisy-root. Butterfly-weed.*

Hairy; stem erect, oblique or decumbent, with spreading or often recurved branches; leaves varying from oblong-lanceolate to linear-lanceolate or linear, mostly alternate, on very short petioles; umbels numerous, often corymbose; lobes of the crown lanceolate-oblong; horn subulate, rather erect. — *Linn. sp.* (ed. 2.) 1. *p.* 316; *Michx. fl.* 1. *p.* 117; *Pursh, fl.* 1. *p.* 183; *Bigel. med. bot.* 2. *p.* 89. *t.* 6, *and fl. Bost. p.* 100; *Ell. sk.* 1. *p.* 325; *Bart. veg. mat. med.* 1. *t.* 22; *Torr. fl.* 1. *p.* 285; *Beck, bot. p.* 237; *Sweet, Brit. fl. gard.* (ser. 2.) *t.* 24; *Darlingt. fl. Cest. p.* 173; *Decaisne in DC. prodr.* 8. *p.* 567. A. decumbens, *Linn. sp.* (ed. 1.) 1. *p.* 216.

Plant destitute of a milky juice. Root large and fleshy, branching or fusiform. Stems commonly numerous, usually ascending or procumbent, 1 – 2 feet long. Leaves mostly scattered, but sometimes (particularly the lower ones) opposite, 2 – 4 inches long and half an inch to an inch wide, acute or rather obtuse: petioles about two lines long. Umbels many-flowered. Flowers bright orange. Lobes of the crown about twice as long as the stigma, erect: horn about as long as the lobe. Tube of the stamens contracted into a narrow neck under the crown. Follicles lanceolate, acuminate, about four inches long.

Sandy fields; frequent. July – August. This species has long been celebrated for its medicinal virtues, but its use is now almost confined to the Botanic doctors. It is considered diaphoretic, cathartic and expectorant. (See the works quoted above, and *Wood & Bache's U. S. Dispens. p.* 118.)

9. Asclepias verticillata, *Linn.* (Pl. LXXXVII.) *Whorled Silkweed.*

Stem simple or branched, marked with pubescent lines, slender; leaves mostly verticillate, narrowly linear, revolute on the margin; umbels lateral and terminal; lobes of the crown short, very obtuse, 2-toothed; horns falcate, much exserted. — *Linn. sp.* 1. *p.* 217; *Michx. fl.* 1. *p.* 116; *Pursh, fl.* 1. *p.* 183; *Ell. sk.* 1. *p.* 324; *Nutt. gen.* 1. *p.* 168; *Bigel. fl. Bost. p.* 104; *Torr. fl.* 1. *p.* 284; *Beck, bot. p.* 236; *Darlingt. fl. Cest. p.* 173; *Hook. fl. Bor.-Am.* 2. *p.* 54. *t.* 144; *Decaisne in DC. prodr.* 8. *p.* 569.

Stem 1 – 3 feet high, marked with 4 – 6 downy lines, very slender, usually more or less branched towards the summit. Leaves 2 – 3 inches long and about one line wide, crowded, more or less perfectly verticillate, but often scattered; the margin narrowly revolute. Umbels about an inch in diameter: peduncle about half an inch long, and the pedicels about the same length. Flowers small. Corolla greenish white. Stamineal crown white, elevated on the contracted tube of the stamens: lobes almost equalling the stigma, concavely truncate, with a large acute tooth on each side. Follicles about two inches long, linear-lanceolate, tapering to a long point, smooth.

Dry hill-sides; frequent. July – September.

2. ACERATES. *Ell. sk.* 1. *p.* 316; *Endl. gen.* 3488; *Decaisne in DC. prodr.* 8. *p.* 521.

[From the Greek, *a*, privative, and *keras*, a horn; the stamineal crown being without horns.]

Calyx 5-parted. Corolla deeply 5-parted; the limb spreading or reflexed. Stamineal crown 5-parted; the lobes erect or curved, concave, without an awn. Anthers terminated by a membrane. Pollen-masses clavated, suspended by their slender attenuated summit. Styles slender. Stigma flattish-depressed. Follicles smooth or muricate. — Herbs with the habit of ASCLEPIAS, from which they differ chiefly in wanting the horns of the nectary. Flowers mostly greenish.

1. ACERATES VIRIDIFLORA, *Ell.* (Pl. LXXXVIII.) *Green-flowered Silkweed.*

Stem erect or ascending, pubescent; leaves varying from ovate or obovate to lanceolate, rather thick, pubescent on both sides, nearly sessile; umbels somewhat globose, many-flowered, almost sessile, nodding; segments of the corolla oblong, reflexed; lobes of the crown oblong, equalling the stamineal column.—*Ell. sk.* 1. *p.* 317; *Decaisne in DC. prodr.* 8. *p.* 522. Asclepias viridiflora, *Raf. in med. repos.* 11. *p.* 360; *Pursh, fl.* 1. *p.* 181; *Torr. fl.* 1. *p.* 284; *Bigel. fl. Bost. p.* 104; *Beck, bot. p.* 237; *Darlingt. fl. Cest. p.* 174; *Hook. fl. Bor.-Am.* 2. *p.* 53. *t.* 143. A. lanceolata, *Ives in Sill. jour.* 4. *p.* 252, with a plate. A. obovata, *Ell. sk.* 1. *p.* 321. Polyotus heterophyllus, *Nutt. in trans. Am. phil. soc.* (n. ser.) 5. *p.* 199.

Stems often clustered, 1 – 2 feet high, rigid. Leaves 2 – 3 inches long and from half an inch to an inch and a half or more in width, acute or obtuse, sometimes emarginate. Umbels 2 – 4 terminal and in the upper part of the stem, 1 – 1½ inch in diameter, on very short thick pubescent peduncles. Segments of the calyx lanceolate. Corolla greenish; the oblong segments reflexed close against the pedicel. Lobes of the crown appressed to the stamineal column; the lobes obtuse, not cucullate: horn entirely wanting. Pollen-masses much more slender, and with a much longer neck, than in ASCLEPIAS. Follicles 3 – 4 inches long, lanceolate, somewhat ventricose, nearly smooth; the point long and tapering.

Dry hills and sandy fields: southern part of the State. July.

GROUP 11. *Ovary free (superior), 2-celled, with 1 – 3 ovules in each cell; in fruit 1 – 2-seeded. Corolla regular, sometimes nearly polypetalous, occasionally wanting. Stamens 2, fewer than the lobes of the corolla, inserted on its tube or on the receptacle. — Shrubs or trees.*

ORDER LXXXI. OLEACEÆ. *Hoffmannsegge.* THE OLIVE TRIBE.

Calyx 4-lobed or 4-toothed, persistent, sometimes wanting. Corolla 4-cleft or of four separate petals, deciduous; the æstivation mostly valvate, sometimes wanting. Stamens 2 (rarely 3 – 4): anthers bursting longitudinally. Ovary 2-celled, with two pendulous collateral ovules in each cell: style single or none: stigma either undivided or 2-cleft. Fruit by suppression usually one-celled and 1 – 2-seeded. Seed with copious dense albumen. Embryo straight: cotyledons foliaceous.— Trees or shrubs, with opposite undivided or pinnated leaves.

1. FRAXINUS. *Tourn.; Endl. gen.* 3353; *DC. prodr.* 8. *p.* 274. ASH.

[Named from the Greek, *phraxis*, a separation; in allusion to the facility with which the wood splits.]

Flowers polygamous or diœcious. Calyx small, 4-cleft or none. Petals 4, cohering in pairs at the base, oblong or linear, often wanting. Stamens 2, sometimes 3 – 4. Style single, erect: stigma 2-cleft. Fruit a samara, 2-celled, compressed, winged above, by abortion one-seeded. Albumen fleshy, slender. Cotyledons elliptical: radicle linear. — Trees or shrubs, with unequally pinnate leaves, and the flowers in racemes or panicles.

1. FRAXINUS AMERICANA, *Linn.* (Pl. LXXXIX.) *White Ash.*

Young branches smooth; petioles and branches terete; leaflets in 3 – 4 pairs, with partial footstalks, elliptical or oblong-ovate, acuminate, serrate or nearly entire, glaucous underneath; samara linear-spatulate, obtuse, with a long narrow terete base. — *Linn. sp.* 2. *p.* 1051; *Willd. sp.* 4. *p.* 1102; *Michx. sylv.* 2. *p.* 191. *t.* 118; *Bigel. fl. Bost. p.* 180; *Beck, bot. p.* 232; *Darlingt. fl. Cest. p.* 8; *Loud. arb.* 2. *p.* 1232. *t.* 1055; *Hook. fl. Bor.-Am.* 2. *p.* 51; *DC. prodr.* 8. *p.* 277. F. acuminata, *Lam. dict.* 2. *p.* 542; *Pursh, fl.* 1. *p.* 9. F. discolor, *Muhl. cat. p.* 101.

A tall tree (40 – 60 feet high and 1 – 2 feet in diameter; but sometimes, according to the younger Michaux, attaining a height of 80 feet and a diameter of 3 feet), with a light gray bark, which is generally furrowed, with transverse cracks. The heart-wood of old trees is reddish, and the sap white. Young branches marked with small whitish warts. Leaves at

first pubescent, but finally almost smooth except on the midrib and larger veins, pale underneath: leaflets 2 – 4 inches long, varying from ovate to narrowly elliptical, more or less abruptly narrowed at the base into a partial petiole, remotely denticulate-serrate, particularly towards the summit, but sometimes entire or only waved on the margin (described by Michaux as entire, but serrate in his figure): petiole pubescent on one side. Flowers mostly triandrous, in trichotomously divided panicles; the divisions with sheathing deciduous bracts at the base. Sterile panicles at first dense, at length more expanded. Pedicels slender, smooth. Calyx campanulate, lacerately many-toothed at the summit. Petals none. Ovary oblong, 2-celled with 2 ovules in each cell, tapering into a long deciduous style which is 2-cleft at the summit: stigmas revolute. Samara 1½ – 2 inches long, and the wing about one-fourth of an inch wide, often very slightly emarginate; the lower part terete, and tapering to the base.

Woods and banks of rivers; common in most parts of the State, but most abundant in the western counties. *Fl.* April – May. *Fr.* July. The wood of this tree, being tough and highly elastic, is employed for a great variety of purposes; such as the shafts of carriages, felloes of wheels, handles of scythes, rakes, etc., as well as for many parts of machinery.

2. FRAXINUS SAMBUCIFOLIA, *Lam.* *Black Ash. Water Ash.*

Young branches and petioles nearly smooth; leaflets usually in 4 pairs, broadly lanceolate, sessile, obtuse at the base, serrate, acuminate, smooth above, more or less pubescent on the veins underneath; samara narrowly elliptical-oblong, obtuse, scarcely tapering at the base.—*Lam. dict.* 2. *p.* 549; *Michx. sylv.* 2. *p.* 201. *t.* 122; *Pursh, fl.* 1. *p.* 8; *Beck, bot. p.* 232; *Loud. arb.* 2. *p.* 1334. *f.* 1257 & 1258; *Hook. fl. Bor.-Am.* 2. *p.* 50; *DC. prodr.* 8. *p.* 278.

A large tree, but commonly inferior in size to the preceding, and the bark of a darker grey color; the heart-wood of a brownish tinge. Young branches of a grayish color, sprinkled with a few whitish warts and numerous little black dots: buds bluish. Leaflets sometimes in only three pairs, 3 – 4 inches long, mostly smooth (except a pretty copious rusty wool on the midrib, especially towards the base), deep bright green above, and but little paler underneath. Flowers much as in the preceding species. Samara an inch and a quarter long and 4 – 5 lines wide, emarginate; the wing extending to the base.

Wet woods and swamps; rather scarce in the southern part of the State, but common in the northern and western counties. *Fl.* May. *Fr.* July. The wood is tough and compact, but is less durable than the White Ash.

3. FRAXINUS PUBESCENS, *Walt.?* (Plate XC.) *Gray Ash.*

Young branches terete and (as well as the petioles) smooth; leaflets in about three pairs, with partial footstalks, lanceolate and elliptical-lanceolate, with a long acumination, remotely and obtusely serrate-denticulate, green on both sides, smooth except the axils of the veins and along the midrib underneath; samara linear-spatulate, the wing tapering on the narrow base. —*Walt. fl. Car. p.* 254? F. tomentosa, *Michx. f. sylv.* 2. *t.* 119?

A tree 20 – 25 feet high, with slender branches; the twigs of a grayish color, and quite smooth. Leaflets usually in three pairs, 3 – 5 inches long and three-fourths of an inch to an inch and a half wide, green on both sides but darker and shining above, abruptly contracted at the base into a stalk which is 4 – 6 lines long and nearly smooth (except along the upper side), often obscurely serrate, attenuate above into a long sharp point. Flowers nearly as in *F. Americana*. Samara about $1\frac{3}{4}$ inch long; the wing a little dilated in the middle, truncate and emarginate at the summit; the base narrow and rather long, but margined nearly the whole way with the decurrent wing.

Margin of rivulets, and in situations that are often overflowed. *Fl.* May. *Fr.* July. This species I have not found actually within the limits of the State, but it is frequent in the adjoining parts of New-Jersey. I cannot refer it with certainty to any of the species in Michaux's Sylva. It differs from the *F. tomentosa* of that work, in its smooth branches and petioles, and in the narrower wing of the samara, as well as in other characters of less importance. It is noticed and figured here, that it may be further examined. Michaux thinks there are several undescribed species of Ash east of the Mississippi.

2. LIGUSTRUM. *Tourn.; Endl. gen.* 3352; *DC. prodr.* 8. *p.* 293. PRIVET.

[From the Latin, *ligare*, to tie; its pliable branches being sometimes used as cords.]

Calyx minutely 4-toothed, deciduous. Corolla funnelform, 4-lobed. Stamens 2, included. Ovary 2-celled, with two ovules in each cell: style short: stigma 2-cleft, obtuse. Berry globose, 2-celled; the cells 2- (or by abortion 1-) seeded. — Shrubs with opposite entire leaves, and the flowers in a panicle or thyrsus.

1. LIGUSTRUM VULGARE, *Linn.* *Common Privet*, or *Prim.*

Branchlets slightly pubescent; leaves elliptical-lanceolate; panicles crowded. — *Linn. sp.* 1. *p.* 71; *Engl. bot. t.* 764; *Michx. fl.* 1. *p.* 3; *Pursh, fl.* 1. *p.* 7; *Bigel. fl. Bost. p.* 4; *Torr. fl.* 1. *p.* 7; *Beck, bot. p.* 231; *Darlingt. fl. Cest. p.* 2; *DC. prodr.* 8. *p.* 293.

A shrub 4 – 8 feet high, with numerous opposite branches. Leaves 1 – 2 inches long, varying from acute to obtuse and from elliptical to obovate, smooth on both sides. Flowers in terminal thyrsoid panicles. Calyx obscurely toothed or almost truncate. Corolla white; the lobes ovate, obtuse. Berries black, ovoid-globose.

Borders of woods, and along fences. Introduced from Europe, and now thoroughly naturalized in many places, particularly near New-York and on Long Island. *Fl.* End of May. *Fr.* July. This shrub is often cultivated for hedges. The leaves were formerly thought to be useful for ulcers in the mouth and throat.

Subclass III. Apetalous Exogenous Plants.

Corolla none; the floral envelopes consisting of a single series (which is regarded as calyx, but often called *perigonium*), or sometimes entirely wanting (or achlamydeous).

CONSPECTUS OF THE GROUPS AND ORDERS.

Group 1. Flowers perfect, with a conspicuous or colored calyx. Ovary several-celled, many-ovuled. Capsule or berry many-seeded.— Herbs or climbing shrubs.

Order 82. Aristolochiaceæ. Calyx often petaloid; the æstivation valvate. Stamens adherent to the base of the style: stigmas radiate. Capsule or berry 3 – 6-celled, many-seeded.

Group 2. Flowers perfect or rarely polygamous, with a regular and often petaloid calyx: ovules solitary in each ovary or cell. Embryo curved around mealy albumen, rarely in the axis.— Chiefly herbs.

* Ovary one-celled, with a single ovule.

83. Chenopodiaceæ. Calyx persistent; the stamens as many as its lobes, or fewer, and inserted at their base. Fruit an utricle.— Chiefly weed-like herbs, with small flowers.

84. Amaranthaceæ. Calyx of 3 – 5 dry scarious sepals. Stamens 5 or more, distinct or monadelphous, hypogynous: anthers often one-celled. Fruit an utricle.— Herbs; the flowers imbricated with scarious bracts.

85. Polygonaceæ. Stamens inserted on the calyx. Fruit a caryopsis or achenium, compressed or triangular. Embryo curved or sometimes nearly straight, on the outside (rarely in the midst) of starchy albumen. — Herbs, with sheathing stipules (ochreæ).

** Ovary compound, consisting of a whorl of several one-seeded carpels.

86. Phytolaccaceæ. Berry 7 – 10-celled; the cells 1-seeded.

Group 3. Flowers perfect or sometimes polygamous, not disposed in aments. Calyx regular and often petaloid. Ovary 1- (rarely 2-) celled, with a solitary ovule, or but one in each cell. Embryo not coiled around albumen.— Trees or shrubs, rarely herbs.

87. Lauraceæ. Calyx of 4 – 6 somewhat united sepals, in a double series, free from the ovary. Stamens usually more numerous than the sepals: anthers opening by recurved valves. Fruit a berry or drupe.— Trees or shrubs.

88. Santalaceæ. Calyx-tube adherent to the ovary; the limb valvate; the base lined with a fleshy often lobed disk. Stamens opposite the lobes of the calyx. Ovary one-celled. Fruit indehiscent, crowned with the limb of the calyx. Seeds albuminous.— Trees, shrubs, or sometimes herbs. Leaves alternate, entire.

89. Thymelaceæ. Calyx petaloid, imbricated in æstivation; the tube free. Stamens often twice as many as the lobes of the calyx. Ovary with a single pendulous ovule. Seed without albumen.— Shrubs with a tough bark.

90. Eleagnaceæ. Flowers mostly diœcious. Calyx-tube free. Stamens as many as the calyx-lobes and alternate with them, or twice as many. Ovary one-celled, with a single erect ovule. Fruit an achenium, enclosed in the berry-like calyx-tube. Seeds albuminous.—Shrubs; the foliage and branches scaly.

91. Ulmaceæ. Calyx free from the ovary, 4 – 5-cleft, imbricated in æstivation. Ovary 1 – 2-celled, with a single suspended ovule in each cell: styles or stigmas 2. Fruit a samara or drupe.— Trees or shrubs, with rough alternate leaves, and small flowers in axillary clusters.

Group 4. Flowers perfect, destitute of both calyx and corolla. Embryo minute, included in the persistent sac of the amnios at the apex of the albumen.— Herbs or somewhat shrubby plants.

92. Saurauraceæ. Stamens definite. Ovary of 3 – 5 partly united carpels, each with few ascending ovules. Fruit dry or somewhat baccate, with one or few seeds in each carpel.— Herbs with alternate entire leaves, and flowers in racemes or spikes.

GROUP 5. Ovary simple, or of 2 – 4 combined carpels. Flowers small, bracteate or involucrate, but usually destitute of calyx and corolla. — Submerged or floating aquatic herbs.

93. CERATOPHYLLACEÆ. Flowers monœcious, axillary. Stamens numerous: anthers sessile. Ovary one-celled, with a single suspended ovule, becoming a beaked achenium in fruit.—Leaves whorled and dissected, with filiform segments.

94. CALLITRICHACEÆ. Flowers polygamous, axillary, with a calyx-like 2-leaved involucre. Stamen 1 (rarely 2), with a slender filament. Ovary 4-lobed, 4-celled, with a solitary suspended ovule in each cell, indehiscent in fruit.— Leaves opposite.

95. PODOSTEMACEÆ. Flowers arising from a spathe. Calyx mostly wanting. Stamens often solitary, or if more, usually monadelphous. Ovary 2 – 3-celled, with as many distinct styles as cells. Capsule ribbed, with numerous seeds.— Leaves mostly cut into capillary segments.

GROUP 6. Flowers monœcious or diœcious, sometimes furnished with both petals and calyx, but often destitute of both, not amentaceous. Ovary 2 – several-celled, with one or two ovules in each cell. Fruit capsular or drupaceous, with two or more cells.

96. EUPHORBIACEÆ. Calyx free from the ovary, sometimes none. Corolla very often wanting the petals; when present, distinct. Styles distinct. Fruit capsular, separating into several (often three) carpels or *cocci*, which open elastically by one or both sutures.— Juice often milky.

97. EMPETRACEÆ. Calyx consisting of imbricated sepals. Stamens few, as many as the inner sepals. Ovary free, 2 – 9-celled, with a single erect ovule in each cell. Fruit drupaceous (sometimes dry), with 2 – 10 bony nucules.

GROUP 7. Flowers monœcious or diœcious; the sterile and often the fertile also in aments, or in heads or spikes, either furnished with a calyx or achlamydeous. Ovary one – several-celled, but the fruit always one-celled (except in LIQUIDAMBAR).— Trees or shrubs, except in Ord. 131, many of which are herbs.

98. JUGLANDACEÆ. Flowers monœcious. Sterile flowers in aments. Fertile flowers few, clustered. Calyx adherent. Ovary imperfectly 2 – 4-celled, but with a single ovule. Fruit drupaceous; the epicarp somewhat fleshy and coherent, or coriaceous and dehiscent. Endocarp bony. Seed oily, without albumen.— Leaves pinnated.

99. CUPULIFERÆ. Sterile flowers in aments. Fertile flowers solitary or clustered, furnished with an involucre which at length either includes the fruit, or forms a cup at its base. Fruit a 1-celled or 1-seeded nut. Seed without albumen. Cotyledons thick and fleshy.— Leaves simple.

100. MYRICACEÆ. Flowers monœcious, both kinds in aments and achlamydeous. Ovary one-celled, with a single ovule. Fruit dry or drupaceous.— Shrubs, with simple leaves, dotted with resinous glands.

101. BETULACEÆ. Flowers monœcious, both kinds in aments and commonly achlamydeous. Ovary 2-celled, with a single ovule in each cell. Fruit membranaceous or samara-like, one-celled, one-seeded.— Trees or shrubs, with simple leaves.

102. SALICACEÆ. Flowers diœcious, both kinds in aments and achlamydeous. Ovary imperfectly 2-celled, with many ovules: styles or stigmas 2. Fruit follicular, 2-valved. Seeds numerous, with a silky coma. — Leaves simple.

103. BALSAMIFLUÆ. Flowers monœcious, achlamydeous; the sterile in conical, the fertile in globose heads or aments. Capsules 2-beaked, opening between the beaks, several-seeded, collected with the scales into a hard ball.— Leaves palmately lobed.

104. PLATANACEÆ. Flowers monœcious, in globose heads, achlamydeous. Fruit a one-seeded nut, with bristly hairs at the base, collected into a compact ball.— Leaves palmately lobed.

105. URTICACEÆ. Flowers various, often in aments or fleshy heads. Ovary free from the calyx, with a solitary ovule. Fruit an achenium or utricle.

GROUP 1. *Flowers perfect, with a conspicuous or petaloid calyx. Ovary of several cells, with numerous ovules in each cell.—Herbs or climbing shrubs.*

ORDER LXXXII. ARISTOLOCHIACEÆ. *Juss.* THE BIRTHWORT TRIBE.

Calyx (corolla of Linnæan botanists) with the base more or less united with the ovary; the limb coriaceous, valvate. Stamens 6 – 12, inserted on an epigynous disk, or confluent with the base of the style: filaments very short: anthers 2-celled, opening longitudinally. Ovary 6- (rarely 3 – 4-) celled: stigmas radiate. Fruit a capsule or berry, 3 – 6-celled, many-seeded. Seeds with a prominent raphe. Embryo minute in fleshy albumen.

1. ARISTOLOCHIA. *Tourn.; Endl. gen.* 2161. *BIRTHWORT.*

[Named from the Greek, in allusion to its supposed medicinal powers.]

Calyx tubular, ventricose above the ovary, often variously curved; the limb dilated, oblique, often extended into a lip which is entire or 2 – 3-lobed. Stamens 6 (rarely 12?), inserted on an epigynous disk, and adhering to the sides of the style: anthers sessile or nearly so. Ovary 6-celled: ovules numerous, horizontal: style short and thick: stigma 6-parted or -lobed and radiate. Capsule 6-celled, coriaceous, septicidal. Seeds numerous, ovoid, with a large fungous raphe.— Herbs or shrubs, erect or twining. Leaves more or less cordate, often lobed. Peduncles one- or many-flowered; the flowers often large, and mostly of a brownish or greenish color.

1. ARISTOLOCHIA SERPENTARIA, *Linn.* (Plate XCI.) *Virginia Snakeroot.*

Herbaceous; stem erect, flexuous; leaves cordate-oblong, acuminate; peduncles nearly radical; calyx sigmoid, the orifice 2-lipped.—*Linn. sp.* 2. *p.* 961; "*Jacq. hort. Schœnb.* 3. *t.* 385;" *Michx. fl.* 1. *p.* 162; *Pursh, fl.* 1. *p.* 596; *Ell. sk.* 2. *p.* 511; *Bigel. med. bot. t.* 49, *and fl. Bost. p.* 328; *Torr. compend. p.* 323; *Beck, bot. p.* 309; *Darlingt. fl. Cest. p.* 515.

Root perennial, consisting of a bunch of long coarse fibres, of a strong aromatic and bitterish taste. Stem 8 – 12 inches high, simple or branched at the base, nearly naked below, slender, pubescent. Leaves 2 – 4 inches long, on short petioles, 3-nerved, cordate and sometimes a little auriculate at the base. Flowers on crooked scaly peduncles, often concealed among decaying leaves. Calyx about an inch long; the tube bent like the letter S, purplish brown; the orifice somewhat 3-lobed. Anthers 12 (or 6, each 2-lobed and the lobes 2-celled?),

sessile. Style short and fleshy: stigma irregularly lobed and waved, thick, projecting over the anthers. Capsule three-fourths of an inch long, roundish-obovoid, 6-angled. Seeds compressed, horizontal.

Woods, in rich soil; not common. *Fl.* June. *Fr.* August. This well known plant has long been celebrated for its medicinal powers, and is used by physicians in most parts of the world. It is stimulant, tonic and diaphoretic. (See *Bigelow, l. c.*; also *Wood & Bache's U. S. Dispens. p.* 607.

2. ASARUM. *Tourn.; Linn* (excl. spec.); *A. Gray in Sill. jour.* 42. *p.* 18. ASARABACCA.

[From the Greek, *a*, not, and *seira*, a band; because it was rejected from the garlands of flowers employed by the ancients.]

Calyx campanulate; the limb 3-parted. Stamens 12: filaments subulate, free or somewhat united to the base of the style: anthers short, extrorse; the connective produced into a long subulate point. Ovary adhering to the calyx: styles united into a thick column, 6-lobed at the summit: stigmas papillose.— Rhizoma creeping, aromatic, throwing up short branches, each bearing two long-petioled cordate-reniform leaves, with a one-flowered peduncle in the fork of the petioles.

1. ASARUM CANADENSE, *Linn.* (Plate XCII.) *Wild Ginger. Coltsfoot.*

Stamens adhering to the lower part of the style. — *Linn. sp.* 1. *p.* 442; *Michx. fl.* 1. *p.* 279; *Pursh, fl.* 1. *p.* 596; *Ell. sk.* 1. *p.* 531; *Bigel. med. bot. t.* 15, *and fl. Bost. p.* 187; *Torr. compend. p.* 324; *Beck, bot. p.* 309; *Darlingt. fl. Cest. p.* 515; *A. Gray, l. c.*

Rhizoma about the thickness of a goosequill, branching, jointed, throwing out numerous fibrous roots. Leaves usually two at the extremity of each branch, spreading, 2 – 4 inches long, the breadth somewhat greater than the length, very obtuse or sometimes with a blunt point, pubescent on both sides: petioles 4 – 8 inches long, hairy. Flower on a peduncle about an inch long, often partly buried in the ground or concealed by dead leaves. Calyx dull purplish brown internally, woolly and yellowish green externally; the tube closely adhering to the ovary: limb deeply 3-parted; the lobes broad, with a slender acumination; the margins and finally the lobes also revolute. Stamens about the length of the style: filaments broadly linear, smooth: anther-cells oblong, distinct; the subulate point of the connective produced beyond the cells. Stigmas linear-oblong, purplish, recurved. Capsule ovoid, woolly, crowned with the calyx-lobes. Seeds ovoid, with a large fleshy raphe.

Shady woods, in rich soil. *Fl.* May. *Fr.* July. The root is a popular medicine. It is aromatic, and has somewhat the taste of ginger. (See *Wood & Bache, U. S. Disp. p.* 116.)

GROUP 2. *Flowers perfect or rarely polygamous, with a regular and often petaloid calyx, and a one-celled one-ovuled ovary; or else with a whorl of one-ovuled carpels. Embryo curved or coiled around the outside of mealy albumen, or spiral, rarely in the axis.—Mostly herbs.*

ORDER LXXXIII. CHENOPODIACEÆ. *Vent.* THE GOOSEFOOT TRIBE.

Calyx of 5 (rarely 4, 3 or 2) sepals which are more or less united; the base sometimes tubular, often capsular, fleshy, winged or spiny in fruit. Stamens usually as many as the lobes of the calyx, and inserted at their bases: anthers 2-celled, opening longitudinally. Ovary with a single ovule at its base: styles mostly 2, and distinct: stigmas simple. Fruit an utricle, or rarely an achenium. Embryo curved, annular or spiral.—Mostly herbs, but sometimes undershrubs, almost always of a homely aspect. Leaves alternate, often fleshy, simple, sometimes wanting or reduced to scales.

CONSPECTUS OF THE TRIBES AND GENERA.

DIVISION 1. CYCLOLOBEÆ. *Embryo annular.*

Tribe 1. ANSERINEÆ. Flowers perfect, all similar in form. Seed with a double integument, free from the pericarp.

1. CHENOPODIUM. Calyx not becoming succulent. Stamens 5. Seed horizontal, lenticular. Embryo forming a complete ring.— Herbs, sprinkled with a mealy powder.
2. AMBRINA. Calyx not becoming succulent. Stamens 5. Seed horizontal or vertical, lenticular. Embryo forming an incomplete ring.— Herbs, not mealy, usually strong-scented.
3. BLITUM. Calyx often becoming succulent and baccate. Stamens solitary. Seed vertical, somewhat globose, unequally compressed.

Tribe 2. SPINACIEÆ. Flowers diclinous; the fertile and sterile differing in form. Integument of the seed single or double.

4. ATRIPLEX. Flowers polygamous. STERILE and PERFECT FL. without bracts. Calyx 3 – 5-sepalled. Stamens 3 – 5. FERTILE FL. with two bracts at the base, which are at length dilated. Calyx none. Fruit compressed, included in the rhombic or hastate bracts. Seed vertical, lenticular, with a double integument.
5. OBIONE. Flowers monœcious or dicœcious. STERILE FL. without bracts. Calyx 4 – 5-sepalled. Stamens 4 – 5. FERTILE FL. with two more or less united bracts at the base, which are at length inflated, and either indurated or corky. Calyx none. Fruit compressed, covered with the enlarged capsule-like bracts. Seed ovate, rostellate, with a double membranous testa.
6. ACNIDA. Flowers dicœcious, without bracts. STERILE FL. Calyx 5-sepalled; the sepals equal, appendiculate. Stamens 5, very short. FERTILE FL. Calyx 3-sepalled. Stigmas 3 – 5. Achenium triangular.

Tribe 3. SALICORNIEÆ. Flowers mostly perfect, or, if diclinous, the sterile and fertile similar, either without bracts, and then immersed in excavations of the rachis; or partly concealed in the joints; or scaly. Seed vertical. Fruit an utricle or achenium. Embryo conduplicate, or half a circle.— Stems jointed. Leaves very short and fleshy, or none.

7. SALICORNIA. Flowers without scales, immersed in hollows of the rachis. Calyx utriculate. Stamens one or two.

Division 2. SPIROLOBEÆ. *Embryo spiral.*

Tribe 4. SUEDINEÆ. Embryo in a flat spiral. Seeds with a double integument.

8. SUEDA. Calyx urceolate, 5-parted, usually baccate in fruit, not appendiculate. Styles united. Seed vertical or horizontal.

Tribe 5. SALSOLEÆ. Embryo in a conical spiral. Seeds with a single integument.

9. SALSOLA. Calyx with a winged border when in fruit. Stamens inserted into a hypogynous disk. Scales none. Seed horizontal.

Division 1. *CYCLOLOBEÆ. C. A. Meyer.*

Embryo curved into a more or less complete ring, around a copious (seldom scanty) central albumen.— Leaves usually dilated, flat.

TRIBE I. *ANSERINEÆ. Moq.-Tand.*

Flowers perfect, without bracts. Fruit an utricle or achenium, rarely somewhat baccate. Seed vertical or horizontal, with a double integument. Embryo nearly or quite annular. —Leaves usually more or less triangular-rhomboid.

1. CHENOPODIUM. *Linn.; Moq.-Tand. Chenop. p.* 20. GOOSEFOOT. PIGWEED.

[So named from the Greek, *chen, chenos,* a goose, and *pous,* a foot; in allusion to the shape of the leaf in some species.]

Calyx 5-parted, not becoming succulent, closed upon the fruit but not wholly covering it, without appendages. Utriculus depressed. Stamens 5. Seed horizontal, lenticular. Embryo perfectly annular.— Herbs or rarely undershrubs, often sprinkled with a mealy or scaly powder. Leaves mostly petiolate and triangular-rhomboid or hastate, toothed or entire.

1. CHENOPODIUM ALBUM, *Linn.* *Goosefoot. Lamb's-quarters.*

Stem herbaceous, erect, branched; leaves rhomboid-ovate, entire and obtusely cuneate at the base, coarsely sinuate-toothed, pale underneath, the uppermost oblong or narrowly lanceolate, and nearly or quite entire; racemes paniculate, somewhat spiked, often nearly leafless; segments of the calyx prominently keeled; seeds smooth and shining, acute on the margin.—*Linn. sp.* 1. *p.* 219; *Engl. bot. t.* 1723; *Pursh, fl.* 1. *p.* 198; *Ell. sk.* 1. *p.* 330; *Bigel. fl. Bost. p.* 107; *Torr. fl.* 1. *p.* 294; *Beck, bot. p.* 296; *Darlingt. fl. Cest. p.* 176; *Moq.-Tand. Chenop. p.* 29.

Annual. Stem 2 – 5 feet high, pyramidally or paniculately branched, angular and grooved. Leaves 2 – 3 inches long, rather fleshy, strongly 3-nerved; the under surface (and partly also the upper) covered with very minute whitish cup-like scales. Flowers in roundish clusters, which are collected in spiked panicles. Calyx green, depressed, 5-angled; the segments roundish, inflexed. Seeds nearly black.

Gardens, waste grounds, etc. Introduced from Europe. July – September. Sometimes the leaves are more entire, when it appears to be the *C. viride* of Linnæus.

2. CHENOPODIUM HYBRIDUM, *Linn.* *Maple-leaved Goosefoot.*

Stem herbaceous, branched; leaves cordate-ovate, acuminate, angularly toothed, green on both sides, the uppermost deltoid; racemes paniculately branched, loose, leafless; lobes of the calyx carinate; seeds lenticular, rugulose, acute on the margin. — *Linn. sp.* 1. *p.* 219; *Engl. bot. t.* 1919; *Pursh, fl.* 1. *p.* 198; *Bigel. fl. Bost. p.* 107; *Torr. fl.* 1. *p.* 295; *Beck, bot. p.* 296; *Darlingt. fl. Cest. p.* 177; *Moq.-Tand. Chenop. p.* 33.

Annual. Stem 2 – 4 feet high. Leaves 2 – 4 inches long, very broad at the base, with 2 – 3 large angular teeth on each side, the point long and very acute; the upper ones smaller, deltoid and nearly entire. Flowers in large terminal panicles, which at length are very loose and divaricate. Glomerules small, few-flowered. Calyx green; the segments roundish. Seed twice as large as in the preceding species, purplish black, flatly lenticular.

About houses and along rivulets; very common. Introduced from Europe. July – August.

2. AMBRINA. *Spach, veg. phan.* 5. *p.* 297 & 299; *Moq.-Tand. Chenop. p.* 36.

AMBRINA.

[Etymology uncertain.]

Calyx 5-parted. Stamens 5. Styles 2 (rarely 3), united below. Utricle compressed or depressed, covered by the persistent calyx. Seed lenticular, horizontal or vertical. Embryo forming an incomplete ring —More or less glandular and often pubescent herbs, of a strong balsamic odor. Leaves toothed, sinuate or pinnatifid.

1. AMBRINA BOTRYS, *Moq.-Tand.* *Jerusalem Oak.*

Erect or assurgent; leaves oblong, pinnatifidly sinuate, obtuse, the upper ones spatulate-oblong; racemes cymose, rather dense, axillary and terminal, leafless; lobes of the fructiferous calyx not carinate; seed horizontal, smooth, the margin obtuse.—*Moq.-Tand. Chenop. p.* 37. Chenopodium Botrys, *Linn. sp.* 1. *p.* 219; *Pursh, fl.* 1. *p.* 198; *Ell. sk.* 1. *p.* 130; *Torr. fl.* 1. *p.* 296; *Bigel. fl. Bost. p.* 108; *Beck, bot. p.* 296; *Darlingt. fl. Cest. p.* 177.

Annual; glandularly pubescent, and a little viscid. Stem about a foot high, flexuous, with somewhat rigid branches. Leaves numerous, 1 – 2 inches long, lobed somewhat like those of the *White Oak*; the upper ones much smaller and narrower in proportion. Flowers minute, in small divaricate cymes. Lobes of the calyx oblong, rather acute. Seed dark purple; the albumen forming about three-fourths of a circle.

Dry soils, roadsides and old fields; probably introduced. July – August. The whole plant has a strong balsamic and rather agreeable odor, especially when it is bruised. Mr. Nuttall remarks that it is indigenous to the banks of the Missouri and Mississippi; and it is also a native of the south of Europe, Siberia and Persia.

2. AMBRINA ANTHELMINTICA, *Spach.* *Wormseed.*

Stem erect; leaves ovate-oblong, narrowed at the base into a petiole, unequally and incisely serrate; racemes spike-like, simple, elongated, slender, leafless; lobes of the calyx not carinate; seed horizontal, globose-lenticular, rounded on the margin.—*Spach, l. c.*, ex *Moq.-Tand. Chenop. p.* 41. Chenopodium anthelminticum, *Linn. sp.* 1. *p.* 220; *Michx. fl.* 1. *p.* 173; *Pursh, fl.* 1. *p.* 198; *Ell. sk.* 1. *p.* 331; *Bart. veg. mat. med.* 2. *t.* 44; *Torr. fl.* 1. *p.* 296; *Beck, bot. p.* 296; *Darlingt. fl. Cest. p.* 177.

Perennial. Stem about 2 feet high, angular and grooved, somewhat glandularly pubescent. Leaves 2 – 3 inches long and 1 – 2 inches wide, very coarsely and sometimes sinuate-serrate. Racemes numerous, axillary and terminal, formed of small glomerules of flowers arranged along a filiform rachis, which in fruit is 1 – 2 inches long. Lobes of the calyx oval, obtuse. Styles 3, united at the base. Seed very small, dark purplish brown, smooth and shining; the embryo forming about three-fourths of a circle.

Road-sides, near New-York. *Fl.* July. *Fr.* September – October. The plant has a strong terebinthine odor. The seeds yield the well-known vermifuge, called *wormseed oil.* This oil resides in minute oblong transparent vesicles which are situated about the summit of the utricle, to which they are only slightly attached, so that they easily separate at maturity.

3. AMBRINA AMBROSIOIDES, *Spach.* *Mexican Tea.*

Stem erect, much branched; leaves oblong, remotely sinuate-toothed or nearly entire, the uppermost linear-lanceolate, entire; racemes axillary, somewhat spiked, nearly simple, leafy; lobes of the calyx somewhat keeled; seed horizontal? (vertical, *Moq.-Tand.*), obtuse on the margin, smooth.—*Spach, l. c. p.* 297, ex *Moq.-Tand. Chenop. p.* 39. Chenopodium ambrosioides, *Linn. sp.* 1. *p.* 219; *Pursh, fl.* 1. *p.* 198; *Ell. sk.* 1. *p.* 330; *Torr. fl.* 1. *p.* 295; *Beck, bot. p.* 296; *Darlingt. fl. Cest. p.* 175.

Annual. Whole plant yellowish green, slightly and glandularly pubescent. Leaves 1 – 2 inches long: lower ones 5 – 8 lines wide, the upper 3 – 5 lines. Spikes about an inch long, with small linear-spatulate leaves. Lobes of the calyx oblong, rather obtuse. Styles 3, united at the base. Utricle covered with oblong vesicles which contain oil, as in the preceding species. Seeds (in my immature specimens) apparently horizontal.

Road-sides and waste places; common near New-York and along the Hudson. *Fl.* August. *Fr.* October. The whole plant has an agreeable aromatic odor.

3. BLITUM. *Linn.; Moq.-Tand. Chenop. p.* 43. *STRAWBERRY BLITE.*

[So named, it is said, from the Greek, *blitos*, insipid; or from the Celtic, *blith*, of the same meaning.]

Calyx of 5 sepals, which are nearly distinct or somewhat united at the base, baccate in fruit or nearly dry, without appendages. Stamens usually solitary. Styles 2, united below, subulate-capillary. Utricle compressed, covered with the calyx. Seed vertical, somewhat globose, unequally compressed. Embryo completely annular.—Mostly annual herbs, with triangular-hastate toothed leaves. Flowers in glomerate (often berry-like) heads.

1. BLITUM? MARITIMUM, *Nutt.* *Salt-marsh Blite.*

Stem erect, angular; leaves deltate-lanceolate, cuneate at the base, incisely toothed, succulent, the upper ones linear-lanceolate; glomerules in axillary leafy spikes; calyx deeply 3-parted, not becoming succulent; seed lenticular, vertical, smooth. — *Nutt. gen.* 2. *add.* (without page); *Torr. fl.* 1. *p.* 5; *Moq.-Tand. Chenop. p.* 44.

Annual. Stem erect, 1 – 2 (– 3, *Nuttall*) feet high, much branched, smooth, angular and sulcate. Leaves about two inches long, attenuate into a petiole at the base, with a few coarse teeth: upper ones with only one or two teeth, or nearly entire. Spikes much shorter than the leaves, consisting of a few densely capitate clusters about the size of a peppercorn, which are arranged in a leafy spike. Flowers polygamous in each head? Calyx longer than the ovary, of three obovate sepals which are nearly distinct to the base. Stamen solitary. Style single, short, slightly 2-cleft at the summit. Utricle obovate, of rather firm texture. Seed (immature) much compressed.

Salt-marshes, Long Island. Near New-York (*Nuttall*). My specimens, which are immature, are from Hoboken. This species turns blackish in drying. It has much the aspect of an Atriplex, and hardly belongs to the present genus.

2. BLITUM CAPITATUM, *Linn.* *Strawberry Blite.*

Stem procumbent or assurgent; leaves triangular-hastate, acute, sinuately toothed; heads alternate, in terminal spikes which are leafless above; calyx at length baccate; seeds smooth, the margin acutely keeled.—*Linn. sp.* 1. *p.* 4; *Michx. fl.* 1. *p.* 2; *Pursh, fl.* 1. *p.* 4; *Torr. fl.* 1. *p.* 4; *Beck, bot. p.* 299; *Moq.-Tand. Chenop. p.* 48.

Annual. Stem about a foot long, diffusely branched. Leaves acutely angular, smooth. Flowers in dense roundish clusters, which are collected towards the summit of the branches. Calyx finally becoming red and succulent. Stamen longer than the ovary.

On grounds recently burned over; not uncommon in the western part of the State, particularly in Oneida county: probably introduced. June. The heads of flowers, when arrived at maturity, somewhat resemble strawberries.

3. BLITUM BONUS-HENRICUS, *C.A. Mey.* *English Mercury. Good King Henry.*

Stem ascending, angular, nearly simple; leaves petiolate, hastate-triangular, obtuse or acute, somewhat sinuate or entire; clusters of flowers approximated in a terminal leafless spike; calyx 5-sepalled; seed minutely dotted, obtuse on the margin.—*C. A. Mey. in Ledeb. fl. Alt.* 1. *p.* 11, ex *Moq.-Tand. Chenop. p.* 46. Chenopodium Bonus-Henricus, *Linn. sp.* 1. *p.* 219; *Engl. bot. t.* 1030; *Pursh, fl.* 1. *p.* 197; *Muhl. cat. p.* 28; *Torr. fl.* 1. *p.* 294; *Beck, bot. p.* 295. Atriplex Bonus-Henricus, "*Crantz, inst.* 1. *p.* 206," ex *Moq.-Tand.*

Perennial. Stem about one foot high, smooth. Leaves 2 – 3 inches long, the breadth at the base equal to the length, nearly entire or somewhat repand, smooth: petiole 1 – 2 inches

long. Flowers in small roundish glomerules which are arranged in a terminal spike; the fertile and sterile mixed, similar in form. Sepals oblong or obovate, mucronate, often truncate or irregularly toothed at the summit. Fertile flowers (in my specimens) always without stamens. Ovary obovate: styles thickish-subulate, longer than the ovary, diverging. Sterile flowers without a rudimentary pistil. Stamens 5, shorter than the calyx: anthers large. Ripe seed not seen.

Oriskany, Oneida county (*Dr. Knieskern*); New-York (*Muhlenberg*). This plant seems to be intermediate between ATRIPLEX and CHENOPODIUM; resembling the former in its vertical seed, and the latter in the structure of the flower.

TRIBE II. *SPINACIEÆ. Moq.-Tand.*

Flowers diclinous, often polygamous; the sterile and fertile dissimilar in form. Seed vertical. Fruit either an utricle or an achenium. Integument of the seed usually double. Embryo annular.—Leaves membranaceous, flat, more or less triangular-hastate.

4. ATRIPLEX. *Tourn.; Moq.-Tand. Chenop. p.* 50. ORACH.

[From the Greek, *a*, not, and *traphein*, to nourish; because most of the species are unfit for food.]

Flowers monœcious or dicœcious, very rarely perfect. STERILE FL. without bracts. Calyx 3 – 5-sepalled, without appendages. Stamens 3 – 5. FERTILE FL. with two distinct or more or less united bracts at the base. Calyx none. Styles 2, united below. Utricle compressed, partly included in the rhombic-ovate or hastate bracts. Seed vertical, somewhat lenticular, with a double integument. Embryo completely annular. — Herbs or sometimes undershrubs, often clothed with bran-like scales. Leaves petiolate, more or less hastate or triangular, toothed or entire. Flowers crowded in glomerate spikes.

1. ATRIPLEX PATULA, *Linn.* *Halberd-leaved Orach.*

Stem herbaceous, much branched, procumbent; leaves deltoid-hastate, petiolate, nearly entire or sinuately toothed, glaucous underneath; bracts rhomboid, acute, often finely toothed at the base, the sides slightly muricate. — *Linn. sp.* 2. *p.* 1053; *Engl. bot. t.* 936; *Bigel. fl. Bost. p.* 373; *Ell. sk.* 2. *p.* 577; *Moq.-Tand. Chenop. p.* 54. A. laciniata, *Pursh, fl.* 1. *p.* 199. A. laciniata, β. Americana, *Torr. fl.* 1. *p.* 293. A. Purshiana, *Moq.-Tand. l. c. p.* 55.

Annual. Stem much branched from the root, spreading on the ground; the branches 1 – 2 feet long. Leaves a little fleshy, mealy underneath; the lower ones two inches or more in length, often triangular, sometimes entire; upper ones triangular-lanceolate. Flowers in glomerate spikes; the fertile and perfect intermixed. Bracts of the fertile flowers usually covered on the outer face with subulate or conical points. Stamens sometimes only 4.

Salt-marshes, and sandy shores as far as the salt water extends; apparently native. August – September.

5. OBIONE. *Gært. fruct.* 2. *p.* 198. *t.* 126. *f.* 5; *Moq.-Tand. Chenop. p.* 78. *OBIONE.*

[Etymology uncertain.]

Flowers monœcious or diœcious. STERILE FL. without bracts. Calyx 4 – 5-sepalled. Stamens 4 – 5. FERTILE with two bracts at the base, more or less united below, at length inflexed, indurated or corky, connivent. Calyx none. Styles 2, united below. Fruit compressed, covered with the bracts, muricate or naked: utricle membranaceous. Seed vertical, ovate, with a short beak; the integument double. Embryo completely annular. — Herbs or undershrubs. Leaves elliptical or more or less ovate. Flowers crowded in small glomerules.

1. OBIONE ARENARIA, *Moq.-Tand.* *Seabeach Orach.*

Stem herbaceous, diffuse; leaves alternate, nearly sessile, oblong-ovate, silvery-mealy underneath, very entire, upper ones acute or acuminate; bracts of the fruit united below, cuneate, retuse, toothed on the margin and muricate on the sides. — *Moq.-Tand. Chenop. p.* 71. Atriplex arenaria, *Nutt. gen.* 1. *p.* 198; *Torr. fl.* 1. *p.* 293; *Beck, bot. p.* 297.

Annual. The whole plant covered with a silvery mealiness. Stem spreading; the branches a foot or more in length, assurgent or procumbent. Leaves 1 – 2 inches long, rather pale green above; the lower ones very obtuse, or sometimes retuse. Perfect flowers mostly in terminal glomerate spikes. Fertile flowers crowded and axillary. Bracts of the fruit broad and closely applied to each other, 2 – 3-toothed on each side. Seed lenticular.

On the seabeach of Long Island. August – September.

6. ACNIDA. *Linn.; Moq.-Tand. Chenop. p.* 78. *COMMON WATER-HEMP.*

[From the Greek, *a*, without, and *knide*, a nettle; because it resembles a nettle, but does not sting.]

Flowers diœcious, without bracts. Sepals membranaceous. STERILE FL. Calyx of five somewhat equal sepals. Stamens 5, very short, inserted into the receptacle. FERTILE FL. Calyx of three unequal sepals. Ovary 3 – 5-angled: stigmas 3 – 5, linear, spreading. Achenium 3 – 5-angled. Seed vertical, compressed, with a double integument. Embryo nearly annular.—Annual, smooth herbs, growing in swamps, with alternate lanceolate entire leaves, and the flowers in axillary and terminal racemes, which are more or less paniculate. The apparent bracts in this genus are abortive or undeveloped flowers.

1. ACNIDA CANNABINA, *Linn.* *Common Water-hemp.*

Fruit acute-angled, smooth. — *Linn. sp.* 2. *p.* 1027; *Michx. fl.* 2. *p.* 234; *Pursh, fl.* 1. *p.* 208; *Ell. sk.* 2. *p.* 694; *Bigel. fl. Bost. p.* 367; *Torr. compend. p.* 373; *Beck, bot. p.* 297; *Moq.-Tand. Chenop. p.* 79.

Stem 3 – 6 feet high, more or less branching, rather succulent. Leaves varying from ovate- to linear-lanceolate, tapering to a long rather obtuse point, acute at the base, petiolate. Racemes or spikes 3 – 8 inches long, leafy; the flowers sessile. STERILE FL. Sepals oblong, obtuse, somewhat concave. Stamens as long as the calyx: filaments short: anthers large, oblong, rather obtuse. FERTILE FL. Stamens none. Sepals ovate, acute, small. Ovary oblong, longer than the calyx: styles somewhat plumose, varying from 3 – 5. Achenium coriaceous, with as many angles as there are stigmas. Seed obovate, compressed, black. Embryo horseshoe-form, but closed.

Borders of salt-marshes, and along the Hudson as far as the water is brackish. *Fl.* August. *Fr.* September. I have not found this plant in the interior of the State, but in Pennsylvania and in the Western States it sometimes occurs in freshwater swamps.

2. ACNIDA RUSOCARPA, *Michx.* *Rough-fruited Water-hemp.*

Fruit with the angles rather obtuse and corrugated. — *Michx. fl.* 2. *p.* 234. *t.* 50; *Pursh, fl.* 1. *p.* 208; *Ell. sk.* 2. *p.* 694; *Moq.-Tand. Chenop. p.* 79. A. rhyssocarpa, *Spreng. syst.* 3. *p.* 903.*

Resembles the preceding in almost every respect except the fruit. This has the angles thickened, and wrinkled or somewhat tuberculate.

Borders of salt-marshes near New-York. August – September. It is probable that this plant is only a variety or particular state of *A. cannabina*. In Michaux's figure, the fruit is not represented as rugose.

TRIBE III. *SALICORNIEÆ. C. A. Mey.*

Flowers perfect, rarely polygamous, without bracts, immersed in excavations of the rachis, or concealed between its joints; all similar in form. Seed vertical. Fruit an utriculus or an achenium. Integument double or simple. Embryo conduplicate or semiannular. — Stems mostly jointed. Leaves fleshy and very short, or none.

7. SALICORNIA. *Tourn.; Moq.-Tand. Chenop. p.* 113. *GLASSWORT.*

[From the Latin, *sal*, salt, and *cornu*, a horn; a saline plant, with horn-like branches.]

Flowers perfect (or by abortion polygamous), immersed in excavations of the rachis. Calyx utriculate, toothed on the margin, at length spongy and furnished with a narrow winged border. Stamens 1 or 2. Styles 2, united below. Utricle compressed, enclosed in the calyx. Embryo annular, conduplicate. — Fleshy smooth herbs or undershrubs, jointed, leafless or sometimes with very short leaves: branches opposite, terete; the joints truncate or 2-toothed; terminal ones floriferous. Flowers minute, three together; the lateral ones sometimes sterile.

* "A. rusocarpa, Gallice pronunciatur; ruse-carpa, *Willd.*, hallucinatione dicitur." *Spreng. l. c.*

1. SALICORNIA HERBACEA, *Linn.* *Common Saltwort*, or *Samphire.*

Herbaceous, annual, erect or assurgent, the joints somewhat thickened at the summit and emarginately 2-toothed; spikes elongated, tapering and rather obtuse at the summit.—*Linn. sp.* (ed. 2.) 1. *p.* 5; *Michx. fl.* 1. *p.* 1; *Pursh, fl.* 1. *p.* 2; *Ell. sk.* 1. *p.* 3; *Torr. fl.* 1. *p.* 1; *Beck, bot. p.* 298; *Moq.-Tand. Chenop. p.* 114. S. Virginiaca, *Linn. sp.* 1. *p.* 4; *Pursh, fl.* 1. *p.* 2.

Stem 8 – 12 inches high, more or less branched, but almost or quite simple, succulent, obscurely 4-sided; the branches with numerous joints, which are somewhat truncate at the summit, and furnished with two short usually obtuse teeth. Flowers placed in little hollows at the base of the upper joints, which thus form very long slender terminal spikes; each consisting of an inflated succulent calyx, enclosing two stamens and the pistil. The stamens expand at different times, and are slightly exserted: anther-cells ovoid, distinct. Ovary ovoid, acute, terminating above in two short styles.

Salt-marshes, Long Island, Staten Island, near New-York, and as far up the Hudson as the salt water extends; also at Syracuse and Salina. *Fl.* August – September. *Fr.* October. The North American plant was once regarded as a distinct species, but it does not differ from the *S. herbacea* of Europe.

2. SALICORNIA MUCRONATA, *Lag.?* *Dwarf Saltwort.*

Herbaceous, annual, erect; the joints 4-angled at the base, with two acute ovate mucronate teeth at the summit; spikes very thick, obtuse. — *Lag. pl. Barill. p.* 52? *Bigel. fl. Bost. p.* 2. S. Virginica, *Moq.-Tand. Chenop. p.* 115?

Stem 4 – 8 inches high, moderately branched, thick and succulent: joints of the branches and spikes short, terminating above in two broad ear-like scales or rudimentary leaves, which are very distinct in dried specimens. Spikes 4 – 6 times as long as they are wide, nearly three lines in diameter. Calyx turbinate, very narrowly margined. Ovary ovate, acute. Styles 2, nearly distinct. Albumen very scanty. Embryo annular.

Salt-marshes on Long Island. *Fl.* September. Easily distinguished from the preceding by its low stem and short thick spikes, as well as the mucronate joints. I am not able to determine whether Lagasca's plant is identical with Bigelow's. It is remarkable that Moquin-Tandon should have described it under the name of *S. Virginica*, Nuttall, (in whose work it stands without a character,) and that he should have appended the sign of verification (an !), while the only habitat he gives is Grenada near Nijar. The Spanish plant is described as suffruticose, while ours is certainly annual; but I have specimens of a Salicornia from Key West, which agrees very well with the northern *S. mucronata*, except that the stem is woody below: this, however, may be the effect of climate or age, as *S. herbacea* itself becomes ligneous at the base late in the season. This and the preceding species are sometimes made into pickles. They are often called *Samphire*, or *Pigeon's-foot.*

3. SALICORNIA AMBIGUA, *Michx.* *Perennial Saltwort.*

Perennial; stem procumbent, with long flexuous ascending branches; the joints truncate, dilated upward, with lunate obtuse teeth.—*Michx. fl.* 1. *p.* 2; *Ell. sk.* 1. *p.* 4; *Torr. fl.* 1. *p.* 2. Arthocnemum? ambiguum, *Moq.-Tand. Chenop. p.* 112.

Root long, creeping extensively in the sand. Stem prostrate, woody at the base, throwing up numerous long usually curved branches; the joints compressed, slightly 2-toothed. Calyx truncate, scarcely margined. Ovary smooth, ovoid, acute. Stigmas 3, glandular-plumose.

Seabeach and borders of salt-marshes, Glencove, Long Island (*Mr. J. Carey*); also about Rockaway Bay, &c. *Fl.* September. A well marked species, and a genuine SALICORNIA.

Division 2. *SPIROLOBEÆ. C. A. Mey.*

Embryo spiral. Albumen none, or in very small quantity. Leaves mostly narrow, somewhat cylindrical and fleshy.

TRIBE IV. *SUEDINEÆ. Moq.-Tand.*

Flowers perfect, minutely bracteolate, all of similar form. Seed vertical or horizontal. Pericarp an utricle. Integument of the seed double. Albumen none, or small in quantity and 2-lobed. Embryo in a flat spiral. — Leaves often narrow and succulent.

8. SUEDA. *Forsk.; Moq.-Tand. Chenop. p.* 120. *SUEDA.*

Species of SCHOBERIA, *C. A. Mey.*

[Etymology unknown.]

Calyx urceolate, 5-parted, fleshy, often becoming baccate, not appendiculate. Stamens 5. Styles united: stigmas 2 – 3, rarely 4 or 5, distinct, divaricate. Utricle depressed. Seed vertical or horizontal, lenticular; the integument double. Embryo terete, coiled in a flat spiral.—Herbs or undershrubs, with sessile more or less terete and fleshy leaves. Flowers mostly in axillary glomerules.

1. SUEDA MARITIMA, *Moq.-Tand.* *Smooth Glasswort.*

Herbaceous, branching, erect, diffuse or assurgent; leaves elongated, linear, semicylindrical, fleshy, rather acute; flowers 2 – 3 together; calyx succulent, inflated in fruit, the lobes somewhat carinate; seed horizontal, rugulose and shining. — *Moq.-Tand. Chenop. p.* 127. Chenopodium maritimum, *Linn. sp.* 1. *p.* 221; *Engl. bot. t.* 633; *Pursh, fl.* 1. *p.* 198; *Torr. fl.* 1. *p.* 296; *Beck, bot. p.* 296. Salsola maritima, *Poir. dict.* 7. *p.* 290. S. salsa, *Michx. fl.* 1. *p.* 174; *Pursh, fl.* 1. *p.* 197; *Bigel. fl. Bost. p.* 107. S. salsa, β. Americana, *Pers. syn.* 1. *p.* 296. S. linearis, *Ell. sk.* 1. *p.* 332. Schoberia maritima, "*C. A. Mey. in Ledeb. fl. Alt.* 1. *p.* 400," ex *Moq.-Tand.*

Annual. Stem 1 – 2 feet high, commonly erect, but often decumbent, with numerous erect or spreading branches. Leaves about an inch long and a line in diameter, very acute. Flowers very small, usually three together. Segments of the calyx rounded, concave, connivent. Utricle very thin. Seed black. Embryo distinctly spiral.

Salt-marshes, Island of New-York and on Long Island. August – September. *Chænopodium salsum*, Linn. (Suæda salsa, *Pall.* = Shoberia salsa, *C. A. Mey.*) is considered by Moquin-Tandon as only a variety of *S. maritima*.

TRIBE V. *SALSOLEÆ. Moq.-Tand.*

Flowers perfect, bracteate, all similar in form. Seed vertical or horizontal. Pericarp an utricle. Integument of the seed simple, membranaceous. Albumen none. Embryo conico-spiral (mostly green). — Leaves mostly semiterete.

9. SALSOLA. *Linn.* (in part); *Moq.-Tand. Chenop. p.* 134. *SALTWORT.*

[From the Latin, *sal*, salt; many of the species yielding abundance of alkaline salt.]

Calyx 5-sepalled; the sepals finally with a broad horizontal scarious wing on the back. Stamens usually 5, without intermediate scales. Styles 2, mostly united at the base. Utricle depressed, covered with the persistent calyx, which is crowned with a winged border. Seed horizontal, somewhat globose. Embryo cochleate (like a minute snailshell).—Herbs or undershrubs, with fleshy mostly terete leaves and axillary sessile flowers.

1. SALSOLA KALI, *Linn.* *Common Saltwort.*

Herbaceous, somewhat erect or procumbent, with ascending branches; leaves subulate, spiny at the tip; bracts shorter than the floral leaves; flowers solitary; wing of the fructiferous calyx broad, nearly orbicular, spreading. — *Linn. sp.* 1. *p.* 222; *Engl. bot. t.* 634; *Pursh, fl.* 1. *p.* 197; *Torr. fl.* 1. *p.* 297; *Beck, bot. p.* 298; *Moq.-Tand. Chenop. p.* 136. S. Carolina, *Michx. fl.* 1. *p.* 174; *Ell. sk.* 1. *p.* 331; *Bigel. fl. Bost. p.* 106. S. Kali, *var.* Caroliniana, *Nutt. gen.* 1. *p.* 199.

Annual. Stem branched, erect when young, but at length diffuse and very much branched, forming a very prickly bush-like plant, pubescent or nearly smooth. Leaves broad at the base, half an inch to an inch in length, with a pungent spiny tip; the lower ones falling off late in the season. Flowers in the axils of the upper leaves, each with two bracts or rather bracteoles at the base, which resemble the leaves, but one smaller. Sepals acuminate; the summits connivent, forming a sort of beak; the wing, in fruit, about as long as the sepal, purplish. Stamens 5, longer than the calyx: anthers roundish, purple. Styles filiform: stigmas simple. Utricle thin. Embryo green.

Sandy seacoast, and about the harbor of New-York; also along the Hudson as far as the Highlands. *Fl.* August – September.

ORDER LXXXIV. AMARANTHACEÆ. THE AMARANTH TRIBE.

Calyx of 3 – 5 scarious bract-like sepals. Stamens 5 or some multiple of that number, hypogynous, distinct or monadelphous: anthers often one-celled. Ovary mostly one- (sometimes several-) ovuled. Fruit commonly an utricle. Seeds lenticular, vertical. Embryo curved around mealy albumen. — Herbs or sometimes undershrubs; the flowers (often monœcious or dioecious) in spikes, heads or dense clusters, imbricated with dry scarious and mostly colored bracts. Leaves entire, opposite or alternate, petiolate.

1. AMARANTHUS. *Linn.; Endl. gen.* 1972. *AMARANTH.*

ALBERSIA, *Kunth.*

[From the Greek, *a*, not, *maraino*, to fade, and *anthos*, a flower; or flowers which do not fade.]

Flowers monœcious. Calyx of 3 – 5 sepals. STERILE FL. Stamens 3 – 5: anthers 2-celled. FERTILE FL. Styles 3. Utricle opening transversely all round, or indehiscent. — Herbs (mostly annuals), with alternate leaves and minute glomerate or spiked flowers.

* AMARANTHUS proper. *Utricle opening transversely all round.*

1. AMARANTHUS HYBRIDUS, *Linn.* *Hybrid Amaranth.*

Stem sulcate-angled, roughish pubescent, somewhat branching or simple; leaves ovate and lanceolate; flowers pentandrous, in dense compound erect or somewhat spreading terminal and axillary spikes; bracts twice as long as the flower; utricle nearly smooth.—*Linn. sp.* 2. *p.* 990; *Willd. Amaranth p.* 26. *t.* 9. *f.* 17; *Pursh, fl.* 1. *p* 207; *Ell. sk.* 2. *p.* 580; *Bigel. fl. Bost. p.* 353; *Torr. compend. p.* 352; *Beck, bot. p.* 294; *Darlingt. fl. Cest. p.* 526. A. paniculatus, *Willd. l. c. p.* 32. *t.* 2. *f.* 2 ?; *Hook. fl. Bor.-Am.* 2. *p.* 125.

Annual. Stem 2 – 5 feet high, thick, usually with short erect branches towards the summit. Leaves 2 – 4 inches long and 1 – 2 inches wide, roughish and somewhat glandularly pubescent, emarginate and mucronate, abruptly narrowed at the base into a pubescent petiole which is 1 – 2 inches long. Spikes half an inch or more in diameter; the terminal one elongated and tapering; lateral ones shorter, clustered, and often more or less spreading: all of them composed of numerous closely aggregated greenish flowers (sterile and fertile intermixed, with a great preponderance of the latter), which are furnished with projecting subulate spinescent bracts. Calyx of five unequal mucronate sepals. Utricle thin; the upper half separating from the lower all round. Seed orbicular, flatly lenticular, black and shining.

Cultivated grounds, waste places, etc.; very common. Introduced; perhaps from the South. July – November.

2. AMARANTHUS GRÆCIZANS, *Linn.* *Bushy Amaranth.*

Stem obtusely angular, smooth, erect, with numerous spreading branches; leaves obovate and spatulate-oblong, retuse, mucronate; flowers triandrous, in small axillary clusters; bracts twice as long as the flowers; calyx rugose. — *Linn. sp.* 2. *p.* 990; *Willd. l. c. p.* 8. *t.* 4. *f.* 7; *Pursh, fl.* 1. *p.* 207. A. albus, *Willd. l. c. t.* 1. *f.* 2?; *Pursh, l. c.; Beck, bot. p.* 382; *Darlingt. fl. Cest. p.* 526; *Hook. fl. Bor.-Am.* 2. *p.* 125. A. Blitum, *Bigel. fl. Bost. p.* 343, not of *Linn.*

Annual. Stem 1 – 3 feet high, pale green or whitish; the branches usually almost horizontal. Leaves about an inch long, very obtuse or emarginate, tipped with a short bristle, narrowed at the base into a longish petiole, smoothish; those of the branches smaller and more spatulate than the lower ones. Flowers very numerous, pale green; the bracts at the base subulate and spinescent. Sepals oblong, mucronate. Utricle thin, dehiscing near the middle. Seed as in the preceding species.

Cultivated grounds, waste grounds and road-sides; common. August – September. An introduced plant, which has perhaps wandered from the South.

3. AMARANTHUS PUMILUS, *Raf.* (Pl. XCIII.) *Dwarf* or *Seaside Amaranth.*

Very smooth; stem diffuse; leaves ovate, obtuse, fleshy, a little rugose; flowers in axillary clusters, pentandrous; calyx 5-sepalled; bracts short, unarmed; utricle smoothish. — *Raf. in N. York med. repos* 2. *p.* 360; *Nutt. gen.* 2. *p.* 210; *Ell. sk.* 2. *p.* 580; *Torr. comp. p.* 353; *Beck, bot. p.* 295.

Annual. Stem scarcely rising from the ground, but spreading out on all sides. Leaves about three-fourths of an inch long, bright shining green, with the veins more or less purplish, often emarginate, mostly clustered toward the extremity of the branches. Flowers greenish and purple, sessile, in somewhat crowded clusters. Sepals linear-spatulate. Stamens 5. Utricle oblong-ovoid, opening near the middle. Seed lenticular-ovoid.

Sandy seacoast of New-Jersey, particularly on the beach near Babylon. *Fl.* August – September.

** ALBERSIA, Kunth. *Utricle indehiscent.*

4. AMARANTHUS DEFLEXUS, *Willd.?* *Prostrate Amaranth.*

Stem prostrate, branching from the base, pubescent; leaves rhombic-ovate, rather acute, undulate on the margin, minutely pubescent and roughish; glomerules axillary, few-flowered, sessile; flowers 3 – 5-androus; bracts short, not spinescent; utricle smoothish.—*Willd. l. c. p.* 18. *t.* 3. *f.* 16; *Pers. syn.* 2. *p.* 560?

Annual. Stems numerous, slender, about a foot long. Leaves about three-fourths of an inch long, strongly waved on the margin, prominently veined underneath, tapering at the base

into a petiole about as long as the lamina. Glomerules 8 – 12-flowered, roundish, loose. Bracts lanceolate. Sepals 5, spatulate, mucronate or nearly acute. Utricle very slightly corrugated, opake. Seed lenticular-ovoid.

Suburbs of Albany: doubtless introduced. August – September. I am by no means positive as to the name of this plant, but it agrees better with the description of *A. deflexus* than of any other. All North American Amaranths need a thorough revision.

I have another species of this section, collected by my friend Mr. J. Carey in a swamp near Whitehall; but owing to the confusion that exists in the genus, I am unable to determine it without better materials than I can command at present. The following are its characters: Stem a foot or more long, smooth, branched. Leaves oblong- or ovate-lanceolate, rather obtuse. Flowers in dense roundish axillary glomerules, arranged on numerous branches which resemble interrupted leafy spikes. All the flowers in my specimen are fertile. FERTILE FL. Calyx of two unequal lanceolate acute sepals. Styles as long as the ovary, almost plumose. Utricle thin, smooth. Seed roundish-lenticular.

ORDER LXXXV. POLYGONACEÆ. *Juss.* THE BUCKWHEAT TRIBE.

Calyx herbaceous, often petaloid, of 3 – 6 sepals. Stamens 3 – 12, inserted on the calyx. Ovary with a single orthotropous ovule at the base: styles 2 – 4. Fruit achenium-like, compressed or triangular. Embryo curved or nearly straight, usually applied to the outside of, but sometimes within, the albumen. — Herbs or rarely undershrubs, with alternate entire leaves, and usually sheathing stipules (ochreæ). Inflorescence various.

1. POLYGONUM. *Linn.; Meisn. monogr. gen. Polyg.* 1826. KNOTWEED.

[Named from the Greek, *polys*, many, and *gonu*, a knee or joint; the stem having numerous joints.]

Calyx mostly 5-parted, petaloid, persistent, erect in fruit. Stamens 3 – 9. Styles 2 – 3. Achenium covered with the persistent calyx.—Annual or perennial herbs, with membranaceous sheathing stipules, and the flowers (not involucrate) in spikes, racemes, panicles or axillary: pedicels jointed.

§ 1. *Albumen farinaceous.*

* AMBLYGODON, Meisn. *Stamens 5 – 7: style 2-cleft: achenium lenticular, acuminate, the margin rounded: cotyledons accumbent, narrow. — Annual: flowers in crowded spikes: ochreæ cylindrical.*

1. POLYGONUM ORIENTALE, *Linn.* *Prince's-feather.*

Stem erect, paniculately branched, hairy; leaves ovate, acuminate; ochreæ salver-form; spikes terminal, nodding, on hairy peduncles; flowers heptandrous. — *Linn. sp.* 1. *p.* 362; *Bot. mag. t.* 213; *Pursh, fl.* 1. *p.* 272; *Ell. sk.* 1. *p.* 257; *Torr. fl.* 1. *p.* 405; *Meisn. l. c. p.* 53; *Beck, bot. p.* 302; *Darlingt. fl. Cest. p.* 251.

Stem 4 – 6 feet high, paniculated and loosely branched above. Leaves 4 – 6 inches long and 2 – 3 inches or more wide, softly pubescent, on long petioles. Ochreæ hairy and ciliate; the limb spreading or reflexed. Spikes numerous, cylindrical; the flowers crowded, large and spreading, bright rose-color. Styles united below. Achenium nearly orbicular, blackish.

Waste places, cultivated grounds, etc.; almost naturalized in some places. July – September.

** FAGOPYRUM, Tourn. *Flowers octandrous: styles 3: achenium triquetrous: cotyledons broad, folded and twisted. — Flowers in racemes or panicles: ochreæ semicylindrical.*

2. POLYGONUM FAGOPYRUM, *Linn.* *Buckwheat.*

Stem erect, paniculately branched, smooth; leaves cordate-sagittate, acute; racemes paniculate; flower with eight glands between the insertion of the stamens; achenium twice as long as the calyx, the angles acute, entire. — *Linn. sp.* 1. *p.* 364; *Engl. bot. t.* 1044; *Bigel. fl. Bost. p.* 159; *Meisn. l. c. p.* 61. *t.* 4. *f. R.*; *Beck, bot. p.* 303; *Darlingt. fl. Cest. p.* 252.

Annual. Stem 2 – 3 feet high, reddish purple when old, pubescent about the joints. Leaves broader than long, on long petioles. Flowers white, tinged with green and rose-color. Achenium dark brown and somewhat clouded.

Fields; remaining as a weed where the plant has been cultivated. June – September. Originally from Central Asia.

*** TINIARIA, Meisn. *Flowers mostly octandrous: styles 3 (rarely 2), or none: stigmas capitate: achenium triquetrous, (rarely somewhat compressed), covered by the calyx: cotyledons accumbent. — Stems twining or climbing: flowers in spicate racemes, panicles or heads.*

† *Stem twining: leaves cordate or cordate-sagittate: flowers in racemes or racemose panicles. bracts and ochreæ semicylindrical.*

3. POLYGONUM CONVOLVULUS, *Linn.* *Black Bindweed.*

Stem twining or prostrate, roughish; leaves somewhat hastate-cordate, acuminate; flowers in slender axillary racemes; calyx-segments keeled, not winged, veinless; ochreæ naked; achenium granular-striate, the sides ovate-triangular.—*Linn. sp.* 1. *p.* 364; *Engl. bot. t.* 941;

Michx. fl. 1. *p.* 241 ; *Pursh, fl.* 1. *p.* 273 ; *Ell. sk.* 1. *p.* 459 ; *Bigel. fl. Bost. p.* 94 ; *Torr. fl.* 1. *p.* 406 ; *Meisn. l. c. p.* 63. *t.* 4. *f. P.* ; *Beck, bot. p.* 303 ; *Darlingt. fl. Cest. p.* 252.

Annual. Stem 2 – 6 feet long, either running over the ground, or twining about other plants. Leaves 1 – 2 inches long ; the lobes at the base often somewhat spreading and acute. Ochreæ nearly smooth. Racemes interrupted, leafy. Calyx tinged with green and purple ; the three exterior segments obtusely keeled, sometimes slightly winged. Stigmas spreading. Achenium almost equally triquetrous, roughish, purplish black.

Cultivated grounds and sandy fields ; very common. July – August. A troublesome weed : probably of European origin.

4. POLYGONUM CILINODE, *Michx.* *Fringe-jointed Polygonum.*

Stem twining, retrorsely pubescent ; leaves somewhat hastate-cordate, acuminate ; ochreæ retrorsely ciliate at the base ; flowers in axillary paniculate racemes ; calyx-segments slightly keeled, but not winged ; achenium smooth and shining, the sides elliptical. — *Michx. fl.* 1. *p.* 241 ; *Pursh, fl.* 1. *p.* 273 ; *Torr. fl.* 1. *p.* 406 ; *Meisn. l. c. p.* 63. *t.* 5. *f.* 18 – 20 ; *Bigel. fl. Bost. p.* 159 ; *Beck, bot. p.* 303.

Annual. Stem 4 – 8 feet long, of a purplish color. Leaves about 2½ inches long and 2 inches broad, a little pubescent, especially on the lower surface ; the lobes at the base somewhat acute. Ochreæ veined, clasping at the base, rather acute, fringed with reflexed hairs at the base. Racemes slender, nearly naked. Flowers smaller than in the preceding species ; the pedicels as long as the calyx, recurved. Calyx greenish or pale rose-color ; the 3 inner segments obtusely keeled. Styles 3, short : stigmas capitate. Achenium sharply triangular, purplish black.

Sides of rocky hills, and in copses ; northern part of the State. July – August. Easily distinguished from *P. Convolvulus* by the fringed nodes and long fruit.

5. POLYGONUM DUMETORUM, *Linn.* *Climbing Buckwheat.*

Stem twining, smooth ; leaves cordate, acuminate ; ochreæ short, smooth, somewhat toothed at the summit, naked at the base ; racemes axillary, interrupted, leafy ; outer calyx-segments with a strongly winged keel ; achenium triquetrous, smooth, the sides ovate-elliptical. — *Linn. sp.* 1. *p.* 364 ; *Meisn. l. c. p.* 63. P. scandens, *Linn. l. c. ; Michx. fl.* 1. *p.* 240 ; *Pursh, fl.* 1. *p.* 273 ; *Ell. sk.* 1. *p.* 459 ; *Bigel. fl. Bost. p.* 159 ; *Torr. fl.* 1. *p.* 406 ; *Beck, bot. p.* 303 ; *Darlingt. fl. Cest. p.* 252 ; *Hook. fl. Bor.-Am.* 2. *p.* 131.

Annual. Stem 6 – 12 feet long, obtusely angular or nearly terete, climbing over bushes and other plants. Leaves 2 – 3 inches long, often slightly hastate, smoothish on both sides. Racemes long : flowers several from each bract. Calyx greenish, or edged with white and purple ; the three outer segments at length strongly winged ; the wing decurrent on the pedicel, and also produced upward beyond the summit. Stigmas small, sessile. Achenium rather acute at each end, black and shining ; the sides concave.

Thickets, borders of woods, etc. ; frequent. *Fl.* August. *Fr.* September. I follow Meisner in regarding this species as identical with *P. dumetorum* of Europe.

†† *Stem prostrate or climbing (not twining) : leaves sagittate or hastate : flowers capitate or somewhat racemose.*

6. POLYGONUM SAGITTATUM, *Linn.* *Arrow-leaved Tear-thumb.*

Stem flaccid, retrorsely aculeate, 4-angled; leaves sagittate, acute, on short petioles; stipules sheathing; flowers somewhat capitate, mostly octandrous; achenium acuminate. — *Linn. sp.* 1. *p.* 364; *Michx. fl.* 1. *p.* 241; *Pursh, fl.* 1. *p.* 272; *Ell. sk.* 1. *p.* 458; *Bigel. fl. Bost. p.* 158; *Torr. fl.* 1. *p.* 407; *Bart. fl. N. Am.* 3. *t.* 101; *Meisn. l. c. p.* 64; *Beck, bot. p.* 302; *Darlingt. fl. Cest. p.* 251; *Hook. fl. Bor.-Am.* 2. *p.* 131.

Annual. Stem 2 – 5 feet long, slender, prostrate or supported by other plants, acutely 4-angled; the angles armed with sharp reflexed prickles. Leaves 1 – 2 inches long and 6 – 8 lines wide; the midrib and petiole prickly. Ochreæ membranaceous, semicylindrical or sheathing, smooth. Flowers in small terminal pedunculate heads; the peduncles smooth, rose-color or nearly white. Achenium nearly as broad as long, smooth, nearly black when ripe.

Wet thickets; common. July – September.

7. POLYGONUM ARIFOLIUM, *Linn.* *Halberd-leaved Tear-thumb.*

Stem flaccid, angular and sulcate; leaves hastate, acuminate, on long petioles; stipules sheathing; flowers somewhat racemose, distinct, hexandrous; styles 2; achenium ovoid, somewhat compressed. — *Linn. sp.* 1. *p.* 364; *Michx. fl.* 1. *p.* 241; *Pursh, fl.* 1. *p.* 272; *Ell. sk.* 1. *p.* 459; *Bigel. fl. Bost. p.* 158; *Bart. fl. N. Am.* 3. *t.* 100; *Torr. fl.* 1. *p.* 407; *Meisn. l. c. p.* 65; *Beck, bot. p.* 251; *Darlingt. fl. Cest. p.* 251.

Annual. Stem 3 – 6 feet long, supported by other plants, purplish red; the angles armed with prickles, which are more remote than in the preceding species. Leaves 2 – 5 inches long, triangular in their outline; the lobes at the base very acute, slightly hairy above, minutely papillose underneath; the petiole prickly. Racemes very few-flowered; the flowers distinct and finally rather remote, rose-color or nearly white: peduncles glandularly hispid. Calyx rarely expanding. Styles 2, short, united at the base: stigmas capitate. Achenium large, doubly convex, smooth. Cotyledons accumbent, oval.

Low swampy grounds. August – September. This species does not agree with the characters of the section in which it is placed by Meisner.

§ 2. *Embryo more or less horny.*

**** PERSICARIA, Tourn. *Flowers* 4 – 8-*androus: styles* 2 – 3: *achenium compressed or triangular, covered by the calyx: cotyledons accumbent, narrow. — Flowers in spikes or heads.*

8. POLYGONUM AMPHIBIUM, *Linn.* *Water Persicaria.*

Leaves elliptical or oblong-lanceolate, acuminate or rather obtuse, acute or somewhat cordate at the base; spikes dense, cylindrical or ovate; flowers pentandrous; styles two;

achenium compressed, smooth. — *Linn. sp.* 1. *p.* 361; *Michx. fl.* 1. *p.* 240; *Torr. fl.* 1. *p.* 403; *Meisn. l. c. p.* 67; *Hook. fl. Bor.-Am.* 2. *p.* 131. P. coccineum, *Willd. enum.* 1. *p.* 429; *Pursh, fl.* 1. *p.* 271.

var. 1. *aquaticum:* floating; leaves ovate-lanceolate, smooth or slightly pubescent. P. amphibium, *β.* aquaticum, *Linn. l. c.; Hook. Brit. fl.* (ed. 4.) 1. *p.* 164; *Torr. l. c.* P. amphibium, *α.* natans, *Michx. l. c.; Meisn. l. c.; Beck, bot. p.* 301; *Hook. fl. Bor.-Am. l. c.* P. coccineum, *var.* aquaticum, *Pursh, l. c.* P. coccineum, *Bigel. fl. Bost. p.* 157. P. fluitans, *Eat. man. bot. ed.* 8. *p.* 368.

var. 2. *terrestre:* stem erect or ascending; leaves elliptical-lanceolate, acute or acuminate, clothed on the lower or on both sides with short rigid appressed hairs, or sometimes very hairy; ochreæ (at least the lower ones) strigose. *Torr. l. c.; Meisn. l c.; Hook. l. c.; Beck, l. c.; Darlingt. fl. Cest. p.* 250. P. amphibium, *Bigel. l. c.* P. coccineum, *var.* emersum, *Michx. l. c.* P. coccineum, *var.* terrestre, *Willd. l. c.; Pursh, l. c.*

Perennial. Stem in *var.* 1. long, slender and floating, or thicker and rooting in soft mud; in *var.* 2. rather stout, 1 – 2 feet high. Leaves 4 – 6 inches long and 1 – 2 inches wide (smaller in the floating form): upper ones nearly sessile; the lower on petioles 3 – 6 lines long. Ochreæ truncate. Spikes 1 – 3 inches long; the flowers bright rose-color and showy. Calyx open. Stamens a little exserted: anthers purplish. Styles slender, exserted, united below: stigmas capitate. Nut orbicular-ovate, compressed, dark brown and a little shining.

Ponds, muddy banks and low grounds; frequent north and west of the Highlands. The two varieties appear quite distinct when seen in their extreme forms, but they gradually pass into each other; and the North American plant is certainly identical with the *P. amphibium* of Europe. It is a troublesome weed in England, in lands reclaimed from marshes.

9. Polygonum Persicaria, *Linn.* *Lady's-thumb.*

Leaves lanceolate; ochreæ truncate, ciliate; spikes ovoid-oblong, dense, erect, on smooth peduncles; flowers mostly hexandrous; styles two; achenium compressed, or sometimes obtusely triangular.— *Linn. sp.* 1. *p.* 361; *Engl. bot. t.* 756; *Michx. fl.* 1. *p.* 239; *Pursh, fl.* 1. *p.* 271; *Bigel. fl. Bost. p.* 156; *Torr. fl.* 1. *p.* 405; *Meisn. l. c. p.* 68; *Beck, bot. p.* 302; *Darlingt. fl. Cest. p.* 249; *Hook. fl. Bor.-Am.* 2. *p.* 132.

Annual. Plant not acrid. Stem 12 – 18 inches long, erect, assurgent or decumbent, smooth, somewhat branching. Leaves 2 – 4 inches long, tapering at each end, rough and hairy on the margin, usually with a darkish lunate or triangular spot near the middle. Stipules fringed with bristly hairs at the summit. Spikes about an inch long; the bracts turbinate. Flowers rose-color or crimson. Styles united about one-third of their length. Achenium ovate, with a short acumination, usually compressed but sometimes triangular, smooth, black and shining.

Waste places, gardens, and often in low grounds; common. Introduced from Europe. July – August. To this species Meisner refers *P. lapathifolium*, Linn., and *P. incanum*, Willd.

10. POLYGONUM PENNSYLVANICUM, *Linn.* *Hairy-stalked Persicaria.*

Stem erect; leaves lanceolate; ochreæ not ciliate; spikes oblong, crowded, on glandularly-hispid peduncles; flowers mostly octandrous; styles 2; achenium lenticular, acuminate, polished. — *Linn. sp.* 1. *p.* 361; *Michx. fl.* 1. *p.* 240; *Pursh, fl.* 1. *p.* 271; *Ell. sk.* 1. *p.* 457; *Torr. fl.* 1. *p.* 404; *Meisn. l. c. p.* 69; *Beck, bot. p.* 302; *Darlingt. fl. Cest. p.* 250.

Annual. Stem 2 – 4 feet high, paniculately branched, with tumid joints, smooth (except the upper part of the branches). Leaves 3 – 6 inches long and 1 – 1½ inch wide, acute; the under surface, the margins and veins of the upper surface rough with short appressed hairs, abruptly narrowed at the base into a petiole. Ochreæ closely embracing the stem, scarious. Spikes usually numerous, 1 – 2 inches long, erect or somewhat nodding; the peduncles clothed with short glandular hairs. Flowers rose-color, often pale, larger than in the preceding species. Stamens sometimes 6. Styles united more than half their length; the free portions spreading: stigmas capitate. Achenium black and shining.

Low moist places, banks of ditches, and cultivated grounds; common. July – October. Resembles *P. Persicaria*, but is easily distinguished by its hispid peduncles.

11. POLYGONUM MITE, *Pers.* *Bearded Persicaria.*

Stem erect or ascending; leaves lanceolate, hairy on the margin; spikes slender or loose, usually several together; ochreæ hairy, fringed with hairs which are nearly as long as the tube; flowers usually octandrous; styles 3; nut triquetrous.— *Pers. syn.* 1. *p.* 440; *Pursh, fl.* 1. *p.* 270; *Ell. sk.* 1. *p.* 456; *Torr. fl.* 1. *p.* 402; *Meisn. l. c. p.* 75; *Beck, bot. p.* 301; *Darlingt. fl. Cest. p* 249. P. hydropiperoides, *Michx. fl.* 1. *p.* 239; *Bigel. fl. Bost. p.* 156, not of *Pursh.*

Perennial. Stem 2 – 3 feet high, branching, sometimes decumbent and rooting at the joints, slender, smooth. Leaves 3 – 4 inches long and 4 – 8 lines wide, narrowed at the base into a short petiole; the midrib on both sides, the margin, and often the upper surface clothed with short appressed hairs; the under surface rough with minute dots, but not pellucid-punctate. Ochreæ fringed with long straight brownish hairs. Spikes sometimes short and rather close, at other times elongated and slender: flowers 4 – 5 from each ciliate bract, as large as in *P. Persicaria.* Calyx rose-color or nearly white, not dotted. Stamens sometimes 7. Styles united below: stigmas capitate. Achenium depressed, with a short acumination, black and shining.

Swamps, margins of streams, and ponds; frequent. August – September.

12. POLYGONUM HYDROPIPER, *Linn.* *Water Pepper. Smart-weed.*

Stem branched; leaves lanceolate, marked with pellucid dots, waved; ochreæ ciliate; spikes terminal and axillary, slender, interrupted, nodding; calyx dotted with glands; stamens

6 – 8; styles 2 – 3; achenium lenticular or triquetrous, roughish. — *Linn. sp.* 1. *p.* 361; *Michx. fl.* 1. *p.* 238; *Bigel. fl. Bost. p.* 155; *Meisn. l. c. p.* 76. P. hydropiperoides, *Pursh, fl.* 1. *p.* 270. P. punctatum, *Ell. sk.* 1. *p.* 455; *Beck, bot. p.* 301; *Darlingt. fl. Cest. p.* 248.

Annual. Stem 12 - 18 inches high, sometimes assurgent, often flexuous, smooth. Leaves 2 – 4 inches long and about half an inch wide, tapering to a point, narrowed at the base into a short petiole. Ochreæ purplish, with scattered appressed hairs on the sides; the fringed summit about one-third the length of the tube. Spikes almost filiform, at first nodding, finally almost erect. Bracts turbinate-cylindrical. Calyx greenish white, covered with minute round flat glands, 3 – 5-parted. Styles united below, recurved above: stigmas capitate. Achenium ovoid-lenticular or ovoid-triangular, black.

Low moist grounds which are occasionally overflowed, and along ditches; very common. August – September. The whole plant is very acrid, and will cause sores if applied to the skin. In Europe it is sometimes used for dyeing woollen cloth of a yellow color. There can be little doubt of our plant being identical with the *P. Hydropiper* of Europe.

***** Tovara, Adans. *Flowers pentandrous: calyx unequally 4-parted, somewhat gibbous: styles 2, distinct, oblique, recurved at the summit: achenium ovate, biconvex.—Flowers in a very long virgate spike, one or two from each bract.*

13. Polygonum Virginianum, *Linn.* *Virgate Persicaria.*

Stem simple; leaves ovate-lanceolate, acuminate; spike terminal, very long and slender; flowers distant and mostly solitary, pentandrous, somewhat recurved; calyx a little gibbous; styles 2, distinct, rigid, oblique; achenium obovate, lenticular.—*Linn. sp.* 1. *p.* 360; *Michx. fl.* 1. *p.* 238; *Pursh, fl.* 1. *p.* 270; *Ell. sk.* 1. *p.* 454; *Torr. fl.* 1. *p.* 403; *Bigel. fl. Bost. p.* 156; *Meisn. l. c. p.* 81. *t.* 3. *f. N; Beck, bot. p.* 301; *Darlingt. fl. Cest. p.* 248; *Hook. fl. Bor.-Am.* 2. *p.* 132.

Perennial. Stem (including the spike) 2 – 4 feet high, erect, pubescent above, angular. Leaves 3 – 6 inches long and $1\frac{1}{2}$ – 3 inches wide, thin, smoothish except on the margin, which is bristly-ciliate: petiole about half an inch long. Ochreæ truncate, hairy, ciliate at the summit. Spike 12 – 18 inches long, naked, mostly simple, virgate; the sheaths 3 – 6 lines apart, with usually a single pedicel growing from each. Calyx somewhat gibbous above, of a greenish white or pale rose-color, 4-parted. Stamens 5, somewhat unequal. Styles rigid, parallel, exserted when in fruit, bent obliquely downward at the base so as to form an obtuse angle with the ovary; the summits recurved: stigmas minute. Achenium large, strongly convex on both sides, brownish and shining when mature, beaked with the persistent styles: embryo slightly curved against one of the edges of the albumen; the cotyledons oblong, accumbent.

Woods and thickets, in rich soil; not rare. *Fl.* July – August. *Fr.* September. A very distinct species, and remarkable for the structure of the flower. It was long ago made a separate genus by Adanson, and more recently by Rafinesque.

****** AVICULARIA, Meisn. *Flowers axillary: stamens mostly* 8: *stigmas* 3, *sessile, capitate: achenium triquetrous: cotyledons incumbent. — Mostly annuals: ochreæ usually* 2 – 3*-parted, or finally lacerate.*

14. POLYGONUM AVICULARE, *Linn.* *Knot-grass. Door-weed.*

Stem procumbent or erect, geniculate, herbaceous; leaves mostly lanceolate or elliptical; ochreæ finally lacerate; flowers axillary, nearly sessile, 2 – 3 together; achenium covered with the calyx, the sides ovate-triangular, rugulose-striate.—*Linn. sp.* 1. *p.* 362; *Engl. bot. t.* 1252; *Michx. fl.* 1. *p.* 237; *Pursh, fl.* 1. *p.* 269; *Nutt. gen.* 1. *p.* 254; *Torr. fl.* 1. *p.* 406; *Meisn. l. c. p.* 87.

var. 1. *procumbens:* stem prostrate; leaves lanceolate-oblong. *Meisn. l. c.* P. aviculare. *Willd. sp.* 2. *p.* 449; *Bigel. fl. Bost. p.* 155; *Beck, bot. p.* 300; *Darlingt. fl. Cest. p.* 247. P. aviculare, β. angustifolium, *Michx. l. c; Pursh, l. c.; Nutt. l. c.*

var. 2. *erectum:* stem erect or ascending; leaves oval or elliptical-oblong. *Meisn. l. c.* P. erectum, *Linn. sp.* 1. *p.* 363; *Willd. l. c.; Pers. syn.* 1. *p.* 439; *Beck, bot. p.* 300; *Nutt. in Amer. phil. trans.* v. (n. ser.) *p.* 163; *Darlingt. l. c.* P. aviculare, β. latifolium, *Michx. l. c.; Pursh, l. c.; Nutt. l. c.; Torr. l. c.*

Annual. Stems 6 inches to 2 feet long, strong and wiry: in *var.* 1. spreading flat on the ground, or the branches somewhat assurgent; in *var.* 2. mostly quite erect, with spreading branches, somewhat thickened at the nodes, striate. Leaves in the first variety mostly lanceolate, acute, half an inch to an inch long, smooth; in the other, 1 – 3 inches long and half an inch to an inch broad, obtuse or rather acute, bright green on both sides. Stipules whitish, at length much lacerated. Flowers small, greenish white, often tinged with purple: pedicels enclosed in the sheaths, or very slightly exserted. Stamens often five, included: filaments dilated at the base; three of them broader than the others, and belonging to an inner series. Stigmas nearly sessile, diverging. Achenium acute, finely striate with rugulose or somewhat waved lines, rather dull.

About houses, road-sides, gardens, etc.; the erect variety in more damp situations: very common, and probably introduced from Europe. June (var. 2. July) – November. It is difficult to belive that the tall erect broad-leaved plant here described is a mere variety of the narrow-leaved prostrate species, until one finds the intermediate forms that connect them. Such states can usually be seen where the two plants grow together.

15. POLYGONUM MARITIMUM, *Linn.* *Seaside Knot-grass.*

Stem prostrate, with very short internodes; leaves lanceolate, glaucous (as is also the stem), somewhat fleshy, often revolute on the margin; ochreæ half as long as the leaves, finally lacerate; flowers axillary, 2 – 3 together, the pedicels a little exserted; achenium rather longer than the calyx, smooth and shining, the sides ovate-elliptical. — *Linn. sp.* 1. *p.* 361; *Ell. sk.* 1. *p.* 453; *Meisn. l. c. p.* 89. P. marinum, *Pursh, fl.* 1. *p.* 269. P. glaucum, *Nutt. gen.* 1. *p.* 254; *Torr. fl.* 1. *p.* 401; *Beck, bot. p.* 300.

Annual (in the Southern States apparently perennial, and even suffrutescent as in the plant of the Mediterranean shores). Stem diffuse and widely spreading, hard and woody towards the base. Leaves about three-fourths of an inch long, thick, lanceolate or elliptical. Stipules very thin and scarious. Flowers twice as large as in *P. aviculare*, pale rose-color or nearly white; the pedicels often distinctly exserted. Stamens included: filaments dilated at the base; three of them broader than the others. Stigmas nearly sessile, diverging. Achenium triquetrous, more than twice as large as in the preceding species, chestnut-brown, acuminate.

Sandy coast of Long Island. August. It is not improbable that the southern plant may be only an annual; for I have not seen the root, and ours is hard and woody at the base, particularly late in the season. The European *P. maritimum* is said to be a perennial, but this does not constitute a specific difference where the other characters agree.

16. Polygonum tenue, *Michx.* *Slender Upright Knotgrass.*

Stem erect, acutely angular, slender, branching; leaves lanceolate-linear, cuspidate; ochreæ tubular, lacerate and bristly at the summit; flowers axillary, somewhat solitary, nearly sessile; achenium triquetrous, nearly smooth, shining. — *Michx. fl.* 1. *p.* 238; *Pursh, fl.* 1. *p.* 270; *Ell. sk.* 1. *p.* 454; *Torr. fl.* 1. *p.* 401; *Bigel. fl. Bost. p.* 155; *Meisn. l. c. p.* 91; *Beck, bot. p.* 301; *Darlingt. fl. Cest. p.* 248; *Hook. fl. Bor.-Am.* 2. *p.* 132. P. linifolium, *Muhl. cat. p.* 41; *Bart. fl. Phil.* 1. *p.* 186, *and fl. N. Am.* 3. *t.* 95. *f.* 2.

Annual. Stem 6 – 12 inches high, roughish on the angles, more or less branched, often from the base; the branches upright. Leaves sessile, about an inch long and less than one line wide, rather rigid, serrulate-scabrous on the margin. Ochreæ cut into numerous long setaceous segments. Flowers as large as in *P. aviculare*, solitary or by pairs, on very short pedicels, greenish white. Stamens 8, short: filaments unequal, five of them subulate, the other three dilated at the base. Stigmas 3, sessile. Achenium nearly black, acute; the sides ovate, concave.

Dry rocky hills and sterile fields; frequent. July – August.

******* Polygonella, Michx. *Calyx 5-sepalled; the sepals nearly equal, or the two outer ones smaller and usually reflexed: stamens 8; filaments of the three that are opposite the sepals of the outer, dilated at the base, and adnate to 1-toothed on each side: styles 3, very short, spreading; stigmas capitate: achenium ovate, 3-gonous, smooth: seed erect: albumen of somewhat horny albumen, very slender, a little curved: cotyledons accumbent. — Flowers polygamous, in paniculate spikes, one from each bract.*

17. Polygonum articulatum, *Linn.* *Joint-weed.*

Annual; leaves linear; ochreæ truncate, naked; spikes paniculate, filiform; bracts imbricated, lower ones mucronate, the upper pointless. — *Linn. sp.* 1. *p.* 363; *Pursh, fl.* 1. *p.* 272; *Torr. fl.* 1. *p.* 405; *Bigel. fl. Bost. p.* 157; *Beck, bot. p.* 304; *Hook. fl. Bor.-Am.* 2. *p.* 133.

Root often very tortuous. Stem 6 – 18 inches high, more or less paniculately branched

above, smooth. Leaves 6 – 10 lines long and scarcely a line wide, obtuse, smooth, deciduous or the lower ones often wanting. Ochreæ cylindrical, obliquely truncate. Spikes (or rather racemes) erect, numerous, 1 – 2 inches long; the rachis consisting of many joints, from each of the bracts of which arises a slender filiform recurved pedicel. Calyx bright rose-color, open; the two outer sepals rather broader than the others, and often emarginate. Stamens shorter than the calyx: 5 of the filaments subulate; the 3 others with a broad membranaceous base. Ovary ovate-triquetrous, very acute: styles or stigmas three. Nut chestnut-brown, triquetrous, acute, polished.

Sandy woods and fields. Sandy plains west of Albany; shore of Oneida lake (*Dr. Gray and Dr. Knieskern*); also on Long Island. August – September.

2. RUMEX. *Linn.; Endl. gen.* 1993. DOCK.

[Etymology unknown.]

Calyx of 6 sepals, which are somewhat united at the base; the three exterior herbaceous, smaller; the three interior somewhat colored, larger, naked or with a grain-like tubercle on the outer surface, closing in a valvate manner over the fruit. Stamens 6, inserted in pairs opposite the exterior sepals. Ovary triquetrous: styles 3: stigmas pencillate. Achenium triquetrous. Embryo slightly curved at one of the sides or angles of the farinaceous albumen, or in the axis: cotyledons narrow, incumbent. — Herbs or rarely suffrutescent plants, often more or less acid, with alternate leaves, and small flowers in verticillate fascicles or racemose panicles: pedicels jointed near the base.

* LAPATHUM, Campt. *Flowers perfect or polygamous; the three inner sepals or valves bearing tubercles.*

1. RUMEX CRISPUS, *Linn.* *Curled Dock.*

Leaves lanceolate, acute, curled on the margin; upper whorls of flowers leafless; inner sepals broadly cordate, entire or crenulate, prominently reticulated, one of them with a large tubercle, the others with an imperfect tubercle. — *Linn. sp.* 1. *p.* 335; *Engl. bot. t.* 1998; *Pursh, fl.* 1. *p.* 247; *Ell. sk.* 1. *p.* 414; *Bigel. fl. Bost. p.* 142; *Torr. fl.* 1. *p.* 378; *Beck, bot. p.* 303; *Darlingt. fl. Cest. p.* 236.

Root perennial, large, fusiform, yellow. Stem 2 – 3 feet high, sulcate, smooth, paniculately branched above. Radical leaves in a tuft, about one foot long and 1 – 2 inches or more wide; those of the stem much smaller. Flowers in numerous fasciculate whorls, of which the upper ones are naked, the lower leafy: pedicels filiform, 3 – 4 lines long. Calyx green: in fruit, the inner sepals are large, broadly cordate, usually denticulate towards the base; one of them (and sometimes more) with a large orange oblong tubercle on the back; the others with the midrib swollen, but not usually tubercled. Achenium acuminate, brown and shining. Embryo applied to the side of the albumen.

Pastures, meadows, and about houses; very common, and a troublesome weed. Introduced from Europe. May – July. The root of this species is a popular application for unhealthy ulcers.

2. RUMEX OBTUSIFOLIUS, *Linn.* *Broad-leaved Dock.*

Stem roughish; radical leaves cordate-ovate, obtuse; inner sepals lanceolate-ovate, acutely toothed near the base, one of them with a conspicuous tubercle. — *Linn. sp.* 1. *p.* 335; *Engl. bot. t.* 1999; *Pursh, fl.* 1. *p.* 248; *Bigel. fl. Bost. p.* 143; *Torr. fl.* 1. *p.* 379; *Beck, bot. p.* 304; *Darlingt. fl. Cest. p.* 236.

Root perennial, thick, brown externally, yellow inside. Stem 2 – 4 feet high, angular and sulcate. Radical leaves often nearly a foot long and 4 – 6 inches wide, roughly pubescent on the veins, thin, slightly waved on the margin. Calyx green, large when in fruit, acutely denticulate toward the base, prominently reticulate-veined.

Moist meadows, pastures, etc.; frequent: introduced. June – July.

3. RUMEX VERTICILLATUS, *Linn.* *Long-stalked Water Dock.*

Very smooth; leaves lanceolate, flat, entire; ochreæ cylindrical, elongated; spikes nearly leafless; pedicels 3 – 4 times as long as the fruit, diffracted; inner sepals broadly cordate, rugosely veined, entire, all of them tuberculose; sides of the achenium broadly ovate-cordate. — *Linn. sp.* 1. *p.* 334; *Michx. fl.* 1. *p.* 217; *Pursh, fl.* 1. *p.* 248; *Torr. fl.* 1. *p.* 379; *Beck, bot. p.* 304.

Root large, fusiform. Stem about two feet high, somewhat branching above. Leaves 5 – 8 inches long and $\frac{3}{4}$ to $1\frac{1}{2}$ inch wide, acute at each end, perfectly smooth on both sides; the petiole about an inch long. Spikes mostly dichotomous; the semiwhorls or fascicles rather distant, 10 – 30-flowered. Flowers perfect. Sepals at first nearly equal, oblong, obtuse, finally nearly as broad as long; the tubercle very prominent. Styles reflexed: stigmas digitate-pencillate. Pedicels of the fruit $\frac{3}{4}$ of an inch long, rather stout, bent abruptly downward. Achenium broadly ovoid-triquetrous. Embryo slightly curved, applied to the middle of one of the sides of the albumen, and nearly enclosed in it.

Swamps in the northern and western parts of the State. June – July. This species is widely diffused in the United States, extending from Canada to Florida, and throughout Louisiana. It is quite distinct from *R. salicifolius*, Weinn. and Hook.

4. RUMEX BRITANNICA, *Linn.* *Yellow-rooted Water Dock.*

Smooth; leaves ovate-lanceolate, flat or slightly waved; ochreæ lacerated and often almost wanting; racemes in a large terminal panicle, elongated, nearly leafless; semiwhorls many-flowered, the pedicels capillary; outer sepals ovate, entire, all of them usually bearing a small tubercle; sides of the achenium elliptical.—*Linn. sp.* 1. *p.* 334; *Michx. fl.* 1. *p.* 217; *Bigel. fl. Bost. p.* 143; *Torr. fl.* 1. *p.* 378; *Beck, bot. p.* 304. R. Britannicus, *Pursh, fl.* 1. *p.* 248; *Ell. sk.* 1. *p.* 414. R. domesticus, *Hook. fl. Bor.-Am.* 2. *p.* 129?

Root large, fusiform, dark externally, yellow inside. Stem 2 – 4 feet high, branching above, stout, fistular. Lower leaves 8 – 12 inches long and 3 – 5 inches wide: upper ones

6 – 8 inches long and 1 – 2 inches wide, often crenulate-waved on the margin. Panicle a foot or more in length, consisting of numerous racemes with their whorls crowded. Flowers perfect. Pedicels of the fruit 4 – 6 lines long, at length reflexed. Inner sepals not dilated at the base, slightly veined. Achenium light brown, acute at each end. Embryo applied to one side of the albumen.

Swamps and borders of streams in the western part of the State, mostly in shady places; frequent. I am not positive that this is the *R. Britannicas* of Linnæus, but it is the plant so considered by some of our botanists.

** ACETOSA, Campt. *Flowers dioecious, usually minute: inner sepals without tubercles.*

5. RUMEX ACETOSELLA, *Linn.* *Sheep Sorrel. Field Sorrel.*

Lower leaves lanceolate-hastate, the lobes entire, acute; flowers diœcious; inner sepals without tubercles, ovate, entire. — *Linn. sp.* 1. *p.* 338; *Engl. bot. t.* 1674; *Michx. fl.* 1. *p.* 216; *Pursh, fl.* 1. *p.* 249; *Bigel. fl. Bost. p.* 144; *Torr. fl.* 1. *p.* 380; *Beck, bot. p.* 304; *Darlingt. fl. Cest. p.* 236.

Perennial. Stem 6 – 12 inches high, slender, simple or paniculately somewhat branched above, angular and furrowed. Radical and lower leaves 1 – 2 inches long: petioles often longer than the lamina. Ochreæ lacerated. Racemes paniculate: whorls 6 – 8-flowered. Sterile flowers with the ovary abortive: anthers very large. Fertile flowers similar in form to the sterile. Achenium nearly as broad as long, closely invested with the outer valves of the perianth. Embryo in the axis, nearly straight: cotyledons narrowly elliptical.

Sterile fields, road-sides, etc. May – August. The whole plant is agreeably acid, and, like many other species of the genus, particularly of this section, contains the binoxalate of potassa.

ORDER LXXXVI. PHYTOLACCACEÆ. *R. Br.* THE POKEWEED TRIBE.

Flowers perfect. Calyx of 4 – 5 sepals. Corolla none. Stamens as many or twice as many as the divisions of the calyx, sometimes indefinite, hypogynous. Ovary compound, consisting of several more or less united (or sometimes free) indehiscent carpels, each with a single ovule; rarely consisting of a single carpel. Fruit baccate, utriculate, an achenium, or samaroid. Seed erect. Embryo annular, surrounding copious farinaceous albumen; or straight, with scanty albumen. — Herbs or shrubs, with mostly alternate entire leaves, and the flowers in spikes or racemes.

1. PHYTOLACCA. *Tourn.; Endl. gen.* 5262. POKEWEED.

[From the Greek, *phyton*, a plant, and *lachanon*, a potherb; in allusion to the use made of the young shoots.]

Calyx petaloid, 5-sepalled. Stamens 7 – 30. Styles short, as numerous as the carpels, recurved. Fruit berry-like, globose-depressed, consisting of 5 – 12 closely united carpels. Embryo circular, surrounding copious farinaceous albumen. — Herbs, with fusiform or turnip-shaped roots. Flowers in axillary racemes.

1. PHYTOLACCA DECANDRA, *Linn.* (Plate XCIV.) *Common Pokeweed.*

Leaves ovate-lanceolate, acute at each end; flowers with 10 stamens and 10 styles; fruit juicy. — *Linn. sp.* (ed. 2.) 1. *p.* 631; *Michx. fl.* 1. *p.* 278; *Pursh, fl.* 1. *p.* 324; *Bigel. med. bot. t.* 3, *and fl. Bost. p.* 185; *Ell. sk.* 1. *p.* 530; *Bart. veg. mat. med.* 1. *t.* 48; *Torr. fl.* 1. *p.* 464; *Beck, bot. p.* 299; *Darlingt. fl. Cest. p.* 283.

Root perennial, large, fusiform and branching. Stem 4 – 6 feet high, stout, branching, very smooth; the pith divided into numerous disks, which are thickish at their edges and very thin in the centre, leaving lenticular spaces between them. Leaves 4 – 8 inches long and 2 – 3 broad, very smooth. Racemes axillary or opposite the leaves, 2 – 8 inches long (including the peduncle). Flowers on short spreading pedicels, each with a subulate bract at the base. Calyx white, and resembling a corolla; the segments ovate, obtuse. Stamens nearly as long as the calyx: anthers white. Ovary large and green, obtusely 10-ribbed: styles short, recurved. Fruit dark purple and juicy when ripe.

Borders of fields, hill-sides, etc.; common. July – September. The root is a violent emetic, and is sometimes used as a substitute for ipecacuanha (See the works quoted above). The young shoots are said to resemble asparagus, and are often eaten early in the season; and the berries are sometimes made into pies. The remarkable pith in this and a few other plants has been made the subject of an interesting memoir by Morren, which is published in the London Annals of Natural History, for October, 1839.

GROUP 3. *Flowers perfect or sometimes polygamous, not disposed in aments, furnished with a regular and often petaloid calyx. Ovary* 1- *(rarely* 2-*) celled, with solitary ovules, or at least a single seed in each cell. Embryo not coiled around albumen. — Trees or shrubs, rarely herbs.*

ORDER LXXXVII. LAURACEÆ. *Juss.* THE CINNAMON TRIBE.

Calyx of 4 – 6 somewhat united petaloid sepals, which are imbricated in two series, free from the ovary. Stamens definite, usually in several series, inserted on the base of the calyx: anthers 2 – 4-celled, opening by recurved valves. Ovary 1-celled, with a single suspended ovule. Fruit a berry or drupe; the pedicel often thickened. Seed with a large almond-like embryo, destitute of albumen. — Trees or shrubs, with alternate leaves, which are rarely lobed, but never serrate.

1. SASSAFRAS. *Nees, syst. Laurin. p.* 487; *Endl. gen.* 2056. *SASSAFRAS.*

[Altered from the Spanish word *Salsafras*, signifying Saxifrage, the virtues of which have been attributed to this plant.]

Flowers diœcious, naked. Calyx 6-parted, membranaceous; the segments equal, deciduous. STERILE FL. Stamens 9, in three series, all of them perfect; the three inner ones with a pair of somewhat stipitate glands at the base of each: anthers oblong, 4-celled. Ovary abortive. FERTILE FL. Stamens 6, short, imperfect. Ovary ovoid, acuminate: style short: stigma capitate. Drupe with a crustaceous endocarp, seated on the thickened and fleshy pedicel. — Trees, with deciduous, sometimes lobed leaves. Flowers unfolding before the leaves, in terminal corymbose or racemose clusters, yellow.

1. SASSAFRAS OFFICINALE, *Nees.* *Sassafras.*

Leaves ovate, entire or 2 – 3-lobed; the younger ones, with the buds and pedicels, silky-pubescent. — *Nees, syst. Laur. p.* 488; *Hook. fl. Bor.-Am.* 2. *p.* 137. Laurus Sassafras, *Linn. sp.* 1. *p.* 371; *Michx. fl.* 1. *p.* 244; *Michx. sylv.* 2. *t.* 81; *Pursh, fl.* 1. *p.* 277; *Nutt. gen.* 1. *p.* 259; *Bigel. med. bot.* 3. *p.* 142. *t.* 35, *and fl. Bost. p.* 160; *Ell. sk.* 1. *p.* 464; *Torr. fl.* 1. *p.* 409; *Beck, bot. p.* 305; *Darlingt. fl. Cest. p.* 254; *Audub. birds, t.* 144.

A middle-sized tree; the trunk rarely one foot in diameter; the bark gray externally, dull reddish within; the younger twigs are greenish yellow. Leaves of two forms; some of them ovate and entire; others 2- or mostly 3-lobed, and cuneate at the base: the former usually

appear earlier than the others. Flowers in clustered corymbose racemes, at the extremity of the last year's shoots, greenish yellow: pedicels 3 – 6 lines long, villous, with long linear villous bracts at the base. Calyx expanded; the sepals oblong, obtuse. STERILE FL. Stamens nearly as long as the calyx; each anther opening by four little valves which are recurved upward; the three inner ones with six orange-colored roundish glands at their base. FERTILE FL. Stamens 6, in a single series, half the length of the calyx, imperfect. Fruit ovoid, dark blue when mature; the pedicels much thickened below the flower, and of a bright purplish red color, the pulp thin, and containing a fixed aromatic oil.

Woods and banks of rivers, south and west of Troy. *Fl.* April – May. *Fr.* September. The Sassafras has long been an article of the materia medica. Its virtues reside in a volatile fragrant oil which is contained in every part of the tree, but particularly in the bark of the root. The roots are chiefly used in the preparation of the compound decoction of guiacum, and certain diet drinks. The volatile oil is used as a stimulant and sudorific in chronic rheumatism and other diseases. (See *Bigelow's med. bot.;* also *Wood and Bache's U. S. Dispens. p.* 591.)

2. BENZOIN. *Nees, syst. Laur. p.* 493; *Endl. gen.* 2057. *WILD ALLSPICE.*

[So named because its fragrance resembles that of the resinous substance *benzoin*]

Flowers diœcious, with deciduous involucrate scales at the base. Calyx 5 – 6-parted, membranaceous, deciduous. STERILE FL. Fertile stamens 9, in three series: anthers 2-celled; the six exterior simple; the three (and sometimes the five) inner dilated and 1 – 2-lobed at the base, each lobe bearing a reniform or somewhat peltate gland. "FERTILE FL. Sterile stamens 15 – 18, filiform, acute, alternating with smaller spatulate ones" (*Nees*). Ovary globose-ovoid: style short: stigma capitate, 2-lobed. Drupe obovoid, with a crustaceous endocarp; the pedicel not thickened.—Trees or shrubs, with entire deciduous leaves. Flowers greenish yellow, in small fasciculate umbels, appearing before the leaves.

1. BENZOIN ODORIFERUM, *Nees.* *Wild Allspice. Fever-bush. Spice-bush.*

Leaves oblong-obovate, pale underneath, nearly smooth; flowers in glomerate minute umbels, the involucre and pedicels smooth.—*Nees, syst. Laur. p.* 497; *Hook. fl. Bor-Am.* 2. *p.* 137. Laurus Benzoin, *Linn. sp.* 1. *p.* 370; *Pursh, fl.* 1. *p.* 276; *Nutt. gen.* 1. *p.* 259; *Ell. sk.* 1. *p.* 463; *Bart. veg. mat. med. p.* 2. *t.* 33; *Torr. fl.* 1. *p.* 409; *Bigel. fl. Bost. p.* 160; *Beck, bot. p.* 305; *Darlingt. fl. Cest. p.* 253. L. Pseudo-Benzoin, *Michx. fl.* 1. *p.* 243.

A shrub 6 – 10 feet high, with smooth virgate brittle branches. Leaves 3 – 5 inches long and 1 – 2 inches wide, acute, acuminate or sometimes rather obtuse, very thin, smooth except a slight pubescence on the veins. Flowers in numerous small sessile umbels. Involucrate scales oblong, concave, enclosing 4 – 6 flowers on short pedicels. Sepals 5 – 6. Stamens 9: filaments of the six exterior mostly subulate; of the three inner, 2-lobed at the base, or

rather with two short adnate abortive filaments, each of them bearing a gland-like abortive anther at the summit: fertile anthers oblong, 2-valved; the valves separating from below, and turning upward. FERTILE FL. not examined. Drupe ovoid, scarlet.

Low moist grounds and borders of rivulets. *Fl.* April. *Fr.* September. An aromatic shrub, known in some places by the name of *Benjamin-bush*. It is sometimes employed medicinally as a stimulant. An oil is extracted from the fruit. Dr. Darlington states that a decoction of the young branches is often used as a medicinal drink for horned cattle in the spring of the year.

ORDER LXXXVIII. SANTALACEÆ. *R. Br.* THE SANDERS-WOOD TRIBE.

Calyx-tube adherent to the ovary; the limb petaloid, 4 – 5-cleft; valvate in æstivation; the base lined with a fleshy disk, which is often variously lobed. Stamens as many as the lobes of the calyx and opposite them, inserted on the edge of the disk. Ovary one-celled, with 1 – 4 ovules: style single. Fruit indehiscent, drupaceous, baccate or nut-like, crowned with the limb of the calyx. Seed albuminous. — Trees, shrubs or sometimes herbs, with alternate leaves and small (rarely dicœcious) flowers.

1. COMANDRA. *Nutt. gen.* 1. *p.* 157; *Endl. gen.* 2076. *BASTARD TOAD-FLAX.*

[From the Greek, *kome*, hair, and *aner*, a man (metaphorically a stamen); the anthers being connected with the corolla by a tuft of hair.]

Calyx urceolate-campanulate; the limb 5-cleft, persistent. Stamens 5, or sometimes 4: anthers adhering by a tuft of hairs on the back, to the lobes of the calyx. Disk 5-lobed, lining the tube of the calyx; the lobes alternating with the stamens. Ovary with three suspended ovules: style single: stigma simple. Fruit somewhat drupaceous, dry, one-seeded, crowned with the persistent limb of the calyx. Embryo straight, at the extremity of fleshy albumen. — Perennial smooth herbs, with entire leaves, and small flowers in terminal or axillary umbellate cymes.

1. COMANDRA UMBELLATA, *Nutt.* *Bastard Toad-flax.*

Stem branching; leaves lanceolate-ovate or oblong; cymes in a leafy terminal panicle; lobes of the calyx oblong, erect; style slender. — *Nutt. gen.* 1. *p.* 157; *Richards. app. Frankl. jour. ed.* 2. *p.* 8; *Hook. fl. Bor.-Am.* 2. *p.* 139. *t.* 179. *f. A.* Thesium umbellatum, *Linn. sp.* 1. *p.* 208; *Pursh, fl.* 1. *p.* 177; *Ell. sk.* 1. *p.* 311; *Bigel. fl. Bost. p.* 99; *Torr.*

fl. 1. *p.* 272; *Beck, bot. p.* 308; *Darlingt. fl. Cest. p.* 163. T. corymbulosum, *Michx. fl.* 1. *p.* 112.

Root (or rhizoma) horizontal, somewhat woody. Stem terete, slender, about one foot high, branching at the summit. Leaves an inch or more in length, sessile, somewhat glaucous. Cymes few-flowered, rather numerous, and forming a terminal panicle. Flowers on short pedicels, which are bracteate at the base. Calyx-tube green, with white acute segments; the lining disk fleshy, with five obtuse gland-like teeth. Stamens shorter than the calyx: filaments subulate: anthers 2-lobed, with a tuft of yellow hairs on the back, by which they are attached to the calyx-lobes. Ovary adhering to the lower part of the calyx: ovules 3, anatropous, suspended from the apex of a free tortuous placenta arising from the base of the cell: style equalling the stamens. Fruit somewhat turbinate, brittle, containing a single roundish seed.

Dry rocky hill-sides, and in woods; frequent. *Fl.* June – July. *Fr.* September.

2. NYSSA. *Gronov.; Juss. in dict. sc. nat.; Endl. gen.* 2086. GUM-TREE.

[Origin of the name obscure.]

Flowers polygamo-dioecious. STERILE FL. Tube of the calyx short; the limb 5-parted, deciduous. Stamens 9 – 10 (5 – 12, *Darlington*), inserted on the outside of a large convex disk: filaments subulate: anthers roundish, 2-lobed. No trace of an ovary. PERFECT FL. Tube of the calyx coherent with the ovary; the limb 4 – 5-parted, deciduous. Stamens 5, inserted on the outside of a flattish disk: filaments subulate: anthers fertile. Ovary oblong, with a single ovule suspended from the summit of the cell. Drupe 1-seeded; the endocarp bony, oval, striate.—Trees, with alternate entire leaves, and flowers in pedunculate clusters or solitary.

This genus has been made a separate order by the elder Jussieu (l. c.); and Mr. Brown long ago (*Prodr. p.* 351) remarked that it hardly belonged to SANTALACEÆ. It differs chiefly in its single ovule, which is attached to the summit of the cell, and not to a free placenta. I have concluded, however, at least for the present, to retain it in SANTALACEÆ.

1. NYSSA MULTIFLORA, *Wang.* (Plate XCV.) *Sour Gum. Black Gum.*

Leaves oval and obovate, acute at each end and often acuminate, very entire; the petiole, midrib and margin villous; fertile peduncles mostly 3-flowered; nut oval. — *Wang. Amer. p.* 46. *t.* 16. *f.* 39; *Walt. fl. Car. p.* 253; *Ell. sk.* 2. *p.* 684; *Beck, bot. p.* 307; *Darlingt. fl. Cest. p.* 164. N. sylvatica, *Marsh. arbust. p.* 97; *Michx. sylv.* 2. *t.* 110. N. villosa, *Willd. sp.* 4. *p.* 1112; *Michx. fl.* 2. *p.* 258; *Pursh, fl.* 1. *p.* 177; *Loud. enc. trees & shr. p.* 694. *t.* 1356, 1357.

A tree 25 – 40 feet high, with a trunk 6 – 12 inches or more in diameter; the wood remarkably tough, on account of the interlacing of the fibres. Leaves 2 – 4 inches long and $1\frac{1}{2}$ – $2\frac{1}{2}$ inches in diameter, mostly clustered at the extremity of the branchlets, variable in form, but mostly obovate with a short acumination, sometimes obovate-lanceolate; when

young, sparsely clothed with longish silky hairs, which finally disappear, except on the midrib, margins and petioles; somewhat coriaceous when old, the upper surface of a deep green and shining. STERILE FL. in pedunculate capitate racemes at the extremity of the branchlets, and from the same buds as the leaves: peduncle about an inch long: pedicels 1 – 2 lines long. Calyx-tube very short and turbinate: segments of the limb oblong. Stamens spreading, three times as long as the calyx-segments. PERFECT FL. sessile at the extremity of the peduncle (which is thicker than in the sterile flowers, and thickened upward), usually 3 together, but sometimes 4 or only 2, with several ovate involucrate bracts at the base. Segments of the calyx oblong. Stamens smaller than in the sterile flowers. Ovary oblong, truncate at the summit, and crowned with the disk: style rather stout, deciduous, incurved or involute at the extremity: ovule anatropous, nearly filling the cell. Drupes nearly half an inch long, often only one or two ripening on each peduncle, blackish blue when ripe; the pulp rather thin, but juicy, acid and bitterish until touched by the frost, when it is somewhat palatable. Nut very hard and tough, oval, somewhat acute at each end, a little compressed, marked with three or four obtuse ridges on each side. Embryo in the axis of thin albumen: cotyledons very broad and thin: radicle short.

Moist woods and borders of swamps; frequent throughout the State, except in the northern counties; very common about New-York and on Long Island. *Fl.* May – June. *Fr.* September. I have never been able to distinguish satisfactorily more than one species of this genus in the State, nor in the neighboring parts of New-Jersey, and this seems unquestionably to be the *N. multiflora* (N. sylvatica, *Michx. sylv.*). Indeed the two species are very closely allied, and cannot be distinguished by the figures in the Sylva Americana. The author of that work states that the River Schuylkill may be assumed as the northern boundary of this tree, and that *N. aquatica* is abundant in the southern part of New-York. This confusion I am at present not able to explain. Besides the names of this tree, given above, it is often called *Tupelo*, *Peperidge*, and *Gum-tree*. The leaves are the first to change in the autumn, turning to bright crimson. The wood, as in the rest of the genus, is remarkable for its toughness, so that it can scarcely be split even in short pieces; hence it is employed for the naves of wheels, and for certain parts of heavy machinery, etc.

ORDER LXXXIX. THYMELACEÆ. *Juss.* THE MEZEREUM TRIBE.

Calyx petaloid; the tube free from the ovary; the limb 4- (rarely 5-) cleft, sometimes entire, imbricate in æstivation. Stamens definite, opposite the calyx-lobes when equal to them in number. Ovary one celled, with a single anatropous ovule suspended from the summit of the cell: style single, lateral or nearly terminal: stigma capitate. Fruit drupaceous or nut-like. Albumen none, or very thin and fleshy. — Shrubs, destitute of stipules, with very tough bark, and opposite or alternate, simple entire leaves. Flowers perfect; the inflorescence various.

1. DIRCA. *Linn; Endl. gen.* 2091. *LEATHER-WOOD.*

[From the Greek, *dirke*, a fountain; the plant growing near water.]

Calyx tubular-funnelshaped, petaloid; the border truncate, and erosely toothed at the summit. Stamens 8, unequal, exserted. Style filiform. Drupe baccate, with a thin dry pulp: endocarp thin and crustaceous. Seed large, with very thin albumen: embryo almond-like. —A shrub of a yellow aspect, with oval leaves and axillary 3-flowered peduncles.

1. DIRCA PALUSTRIS, *Linn.* *Leather-wood.*

Linn. sp. 1. *p.* 358, *and amœn. acad.* 4. *p.* 12. *t.* 1. *f.* 7; *Michx. fl.* 1. *p.* 236; *Bot. reg. t.* 292; *Pursh, fl.* 1. *p.* 268; *Ell. sk.* 1. *p.* 448; *Bigel. med. bot.* 2. *p.* 154. *t.* 37, *and fl. Bost. p.* 149; *Torr. fl.* 1. *p.* 399; *Beck, bot. p.* 307; *Darlingt. fl. Cest. p.* 243; *Hook. fl. Bor.-Am.* 2. *p.* 138; *Loud. enc. tr. & shr. p.* 692. *t.* 1353.

A shrub 2–4 feet high, much branched from the base; the branches flexuous, of a yellowish color. Leaves 3 – 4 inches long, pale yellowish green, obtuse or rather acute, sometimes a little cordate at the base, villous underneath when young, but finally almost smooth: petioles very short. Scales of the buds large, oval, sometimes persistent. Flowers appearing before the leaves, usually three together on a short thick peduncle, and at first enclosed in a hairy bud: the peduncle is apparently formed of the confluent pedicels. Calyx about half an inch long, a little contracted near the base and about the middle. Filaments slender, inserted into the border of a thin disk that lines the corolla nearly half way up, alternately longer, with very minute subulate processes alternating with them at the base. Ovary ovoid, somewhat oblique; the style subterminal, filiform, longer than the stamens. Fruit oval, acute, about half an inch long, reddish when ripe.

Woods and marshes, particularly along rivulets; sometimes in dry situations. *Fl.* April – May. The branches of this shrub are so tough that the Indians use them for making cords.

ORDER XC. ELEAGNACEÆ. *R. Brown.* THE OLEASTER TRIBE.

Flowers mostly dicœcious. Calyx 2 – 4-lobed, persistent. Stamens 4 – 8, inserted into the margin of the torus: filaments almost none: anthers introrse, 2-celled. Ovary free, but surrounded with the tube of the calyx, with the solitary ovule ascending from near the base: style short: stigma capitate or unilateral. Fruit a crustaceous achenium, enclosed in the berry-like persistent calyx-tube. Seed conformed to the cavity of the fruit. Embryo in the axis of thin or fleshy albumen: cotyledons thick: radicle short, conical. — Shrubs or small trees, with the leaves covered with brownish or silvery scurfy scales. Flowers axillary, solitary, spiked or paniculate.

1. SHEPHERDIA. *Nutt. gen.* 2. *p.* 241; *Endl. gen.* 2113. *SHEPHERDIA.*

[Named in honor of JOHN SHEPHERD, late curator of the Liverpool Botanic Garden.]

Flowers dicœcious. STERILE FL. Calyx 4-parted. Stamens 8, alternating with the 8 glandular processes of the disk. FERTILE FL. Calyx urceolate-campanulate; the limb 4-cleft; the tube enclosing the ovary; the orifice closed with the teeth of the torus. Stamens none. Ovary oval: style single, capitate, oblique. Achenium oval, enclosed in the succulent berry-like calyx-tube. — Shrubs, with deciduous opposite leaves and aggregated flowers.

1. SHEPHERDIA CANADENSIS, *Nutt.* *Canadian Shepherdia.*

Leaves elliptical-ovate, nearly naked above, densely clothed with stellate hairs and ferruginous scales underneath. — *Nutt. gen.* 2. *p.* 241; *Torr. compend. p.* 376; *Beck, bot. p.* 306; *Hook. fl. Bor.-Am.* 2. *p.* 138; *Loud. enc. tr. & shr. p.* 700. *fig.* 1732. Hippophaë Canadensis, *Linn. sp.* 1. *p.* 1024; *Michx. fl.* 2. *p.* 227; *Willd. sp.* 4. *p.* 744; *Pursh, fl.* 1. *p.* 119.

A shrub 4 – 8 feet high, with numerous opposite branches. Leaves 1 – 2 inches long and from half an inch to nearly an inch wide, on short petioles; the lower surface densely clothed with beautifully stellate persistent white hairs, and also with numerous little brownish peltate deciduous scales which are more or less deeply ciliate all round: the same kinds of scales and pubescence are found, but in much smaller quantity, on the upper surface, as well as the young twigs, scales, and even the fruit. Flowers in small axillary fascicles or short racemes, yellowish. Fruit the size of a small pea, sweetish but not edible, oval, consisting of the succulent somewhat diaphanous calyx, enclosing the achenium; the latter oval, compressed, smooth and polished, with a coriaceo-crustaceous coat. Albumen very thin and fleshy. Cotyledons oval, flattish: radicle short, obtuse.

Rocky banks of rivers and lakes in the northern and western parts of the State. *Fl.* May. *Fr.* August.

ORDER XCI. ULMACEÆ. *Mirbel.* THE ELM TRIBE.

Flowers mostly perfect, sometimes polygamous by abortion. Calyx campanulate or turbinate, 4 – 8-cleft, imbricate in æstivation. Stamens 5 – 10, inserted on the base of the calyx, as many as its lobes and opposite them. Ovary ovoid, 1 – 2-celled, with a single suspended ovule in each cell: styles or stigmas 2, spreading. Fruit a samara, an indehiscent capsule, or a drupe.— Trees, with alternate roughish penninerved serrate leaves, deciduous stipules, and small fasciculate or somewhat racemose axillary flowers.

1. ULMUS. *Linn.; Endl. gen.* 1850. *ELM.*

[An ancient Latin name of this tree.]

Flowers perfect. Calyx turbinate-campanulate, 5 – 10-cleft. Stamens 5 – 8. Ovary compressed. Fruit a samara, flat, with a broad membranaceous border. — Trees, with simple deciduous leaves and fasciculate (rarely racemose) flowers.

1. ULMUS AMERICANA, *Linn.* *American Elm. White Elm.*

Branches smooth; leaves smooth above, pubescent underneath, very unequal at the base, acuminate, the serratures uncinately acuminate; flowers conspicuously pedicellate, in loose umbellate clusters; samara oval, densely villose-ciliate on the margin — *Linn. sp.* (ed. 2.) 1. *p.* 327; *Michx. fl.* 1. *p.* 172, *and sylv.* 2. *t.* 126; *Pursh, fl.* 1. *p.* 199; *Bigel. fl. Bost. p.* 108; *Ell. sk.* 1. *p.* 338; *Torr. fl.* 1. *p.* 298; *Beck, bot. p.* 333; *Darlingt. fl. Cest. p.* 178; *Loud. enc. trees and shrubs, p.* 724.

A large tree, sometimes 80 or more feet high and 2 – 4 feet in diameter (Michaux has seen it 100 feet high and the trunk 5 feet in diameter), with widely spreading branches; the branchlets slender, flexuous and pendulous. Leaves 3 – 5 inches long, ovate, rather coarsely and somewhat doubly serrate: petiole 3 – 5 lines long. Flowers appearing before the leaves expand, in crowded lateral fascicles: pedicels about half an inch long. Scales of the flower-bud fringed with hairs. Calyx campanulate, obliquely truncate, purplish, 8 – 9-cleft; the lobes rounded and villous. Stamens about eight, exserted; the anthers purple. Styles 2, scarcely exserted, recurved. Fruit half an inch long, reticulately veined, notched at the summit, tapering at the base into a short stipe, which is included in the calyx.

Moist woods; common. *Fl.* April. *Fr.* End of May. The wood of this tree is brown, but is not so compact and strong as that of the two succeeding species.

2. ULMUS FULVA, *Michx.* *Slippery Elm. Red Elm.*

Leaves very rough above and somewhat roughly pubescent underneath, unequal and a little cordate at the base; buds clothed with a brownish wool; flowers nearly sessile, in dense fascicles; samara nearly orbicular, pubescent, but scarcely fringed on the margin. — *Michx. fl.* 1. *p.* 172; *Pursh, fl.* 1. *p.* 200; *Ell. sk.* 1. *p.* 333; *Bigel. fl. Bost. p.* 108; *Torr. fl.* 1. *p.* 299; *Beck, bot. p.* 333; *Darlingt. fl. Cest. p.* 179; *Loud. enc. trees & shrubs, p.* 724. U. rubra, *Michx. f.* 2. *t.* 128.

A tree, in favorable situations attaining the height of 50 or 60 feet, with a trunk 18 inches or more in diameter, but in our State seldom more than 30 or 40 high; the buds, before expanding, covered with russet wool. Branchlets pubescent. Leaves 4 – 6 inches long, ovate-oblong, acuminate, doubly serrate; the upper surface covered with very short rigid hairs which are swollen at the base: petioles one-third of an inch long. Fascicles of flowers proceeding from numerous lateral buds on the branches of the preceding year. Calyx 7 – 8-cleft, clothed with brown wool. Stamens 7 – 9: anthers dark purple. Samara about three-fourths of an inch long, with radiate and reticulate veins, notched at the extremity, with the small lobes mostly overlapping each other.

Rocky woods and banks of rivers, usually in dry soils; common. *Fl.* April. *Fr.* End of May. The inner bark of this tree abounds in a mild mucilage, which is extensively used as a remedy for dysentery, and for other diseases where a demulcent is required. It is also employed externally as a poultice. The article is kept in the apothecaries' shops in the rough state, and in the form of powder. The dried leaves have somewhat the odor of *Melilotus cærulea*. The wood is of a dull reddish color and coarse-grained, but tough and durable.

3. ULMUS RACEMOSA, *Thomas.* (Plate XCVI.) *Thomas's Elm. White Elm.*

Young branchlets pubescent; leaves smooth above, slightly and softly pubescent underneath, acuminate, doubly and uncinately serrate; flowers in compound racemes, conspicuously pedicellate, samara elliptical-oval, villose-ciliate on the margin — *Thomas in Sill. jour.* . . .; *Beck, bot. p.* 334; *Nutt. sylv.* 1. *p.* 37. *t.* 12.

A large tree; the branches furnished with numerous irregular corky and almost winged ridges, as in *U. suberosa*. Leaves obovate-oblong, 3 – 5 inches long and 2 – 2½ inches wide, unequal and somewhat cordate at the base. Scales of the buds more or less pubescent; their margins fringed with reddish hairs. Flowers in racemes, which are finally 1 – 2 inches long: pedicels solitary or 2 – 4 together, slender, with cuneate bearded bracts at the base. Calyx 7 – 8-cleft. Stamens 7 – 8. Samara three-fourths of an inch long, notched at the extremity, with the lobes incurved.

Banks of rivers in the western part of the State; rather frequent. *Fl.* April. *Fr.* June. This species is often confounded with the White Elm (*U. Americana*), which it much resembles in the foliage. It seems to be widely diffused, and yet was overlooked until it was

described by Mr. Thomas. Mr. Oakes has found it in Vermont, and I have specimens of what appears to be the same species from the Western States and Louisiana. The wood is tough, and is employed for axe-helves and whip-stocks.

2. CELTIS. *Linn.; Endl gen.* 1851. NETTLE-TREE.

[An ancient name of the *Lotus*, applied to this tree.]

Flowers polygamous. STAM. FL. Calyx 5 – 6-parted. Stamens 5 – 6. Ovary abortive. PERFECT FL. Calyx 5-parted. Stamens 5. Ovary ovoid, 1-celled, with a single suspended ovule: stigmas 2, elongated. Drupe fleshy, smooth. — Trees, with ovate or oval serrate mostly rough leaves, small greenish flowers, and globose or ovoid berry-like drupes.

1. CELTIS OCCIDENTALIS, *Linn.* *Nettle-tree. Sugar-berry. Beaver-wood.*

Leaves obliquely ovate, acuminate, equally serrate; flowers mostly solitary; fruit red. — *Linn. sp.* (ed. 2.) 2. *p.* 1478; *Michx. fl.* 1. *p.* 249; *Michx. f. sylv.* 2. *t.* 114; *Pursh, fl.* 1. *p.* 200; *Ell. sk.* 1. *p.* 335; *Bigel. fl. Bost. p.* 373; *Torr. fl.* 1. *p.* 300; *Wats. dendrol. Brit. t.* 147; *Beck, bot. p.* 334; *Darlingt. fl. Cest. p.* 180.

A small tree from 15 to 30 feet high and 3 – 8 inches in diameter (much larger in the Southern States), with numerous slender spreading branches. Leaves 2 – 3 inches long and 1 – 2 inches wide, dark green, somewhat cordate at the base; the serratures uncinate and acuminate. Flowers appearing before the leaves expand, sometimes in pairs; the pedicels about an inch long. Calyx dull greenish white; the segments ovate and obtuse. Stamens about as long as the corolla. Ovary with a woolly ring at the base: stigmas large, pubescent, spreading or recurved. Drupe ovoid-globose, the size of a pea, purplish red; the pulp thin and sweet.

Woods, particularly in rocky situations on the banks of rivers. *Fl.* May. *Fr.* September.

GROUP 4. *Flowers perfect, destitute of both calyx and corolla. Embryo minute, included in the persistent sac of the amnios at the apex of the albumen.—Herbs or undershrubs, not floating or submerged.*

ORDER XCII. SAURURACEÆ. *L. C. Rich.* THE LIZARD'S-TAIL TRIBE.

Stamens definite. Ovary composed of 3 – 5 more or less united few-ovuled carpels, with distinct styles or stigmas. Fruit capsular or somewhat baccate, mostly 3 – 5-celled, with a single seed in each cell (rarely one-celled and several-seeded). Embryo cordate. — Herbs, growing in wet places, with a creeping rhizoma and jointed terete leafy stems. Leaves simple, entire. Flowers in racemes or spikes.

1. SAURURUS. *Linn.; Endl. gen.* 1824. *LIZARD'S-TAIL.*

[From the Greek, *saura*, a lizard, and *oura*, a tail; in allusion to the form of the raceme.]

Stamens 6 – 8: filaments free, elongated. Ovaries 3 – 4, connate, each with a recurved stigma. Fruit somewhat baccate, 3 – 4-celled; the carpels easily separating at maturity, 1- (rarely 2-) seeded, not opening. Seeds globose-ovoid. — An herb growing in wet places, with cordate entire leaves, and numerous flowers in a solitary spike.

1. SAURURUS CERNUUS, *Linn.* (Plate XCVII.) *Lizard's-tail.*

Linn. sp. 1. *p.* 341; *Michx. fl.* 1. *p.* 218; *Mirb. ann. du Mus.* 16. *t.* 19; *Ell. sk.* 1. *p.* 432; *Pursh, fl.* 1. *p.* 252; *Torr. fl.* 1. *p.* 381; *Beck, bot. p.* 317; *Darlingt. fl. Cest. p.* 237.

Rhizoma creeping in the mud, about half an inch in diameter, jointed, cylindrical. Stems 1 – 3 feet high, forked at the top, angular and sulcate, smoothish. Leaves oblong-cordate, acuminate, 4 – 6 inches long and 2 – 3 inches wide, with several branching from the base: petiole 1 – 2 inches long; the margin winged. Spike pedunculate, 3 – 6 inches long, slender, every part white, at first nodding at the summit, erect in fruit: peduncle inserted opposite a leaf at one of the forks of the stem: rachis, pedicels and lanceolate sheathing acute: bracts pubescent. Stamens mostly 6, but often 7 or 8, twice as long as the bracts: filaments gradually dilated upward: anthers innate, oblong; the cells opening laterally. Ovaries mostly 4, united at the base, each with 2 – 3 ascending ovules. Fruit somewhat fleshy, strongly corrugated.

Swamps, and margins of ponds and streams; common towards the seaboard, but rare in the interior in the State. *Fl.* June – July. *Fr.* September. Dr. Darlington states that the bruised roots are used in the form of a poultice for inflamed breasts.

GROUP 5. *Flowers either perfect or diclinous, bracteate or involucrate, commonly destitute of both calyx and corolla. Ovary simple, or of 2 – 4 combined carpels. — Submersed or floating herbs.*

ORDER XCIII. CERATOPHYLLACEÆ. *S. F. Gray.* THE HORNWORT TRIBE.

Flowers monœcious. Calyx and corolla none. Involucre 8 – 12-cleft. STERILE FL. Stamens 12 – 24, without filaments: anthers 2-celled. FERTILE FL. Ovary simple, one-celled, with a solitary pendulous ovule: style filiform, oblique: stigma simple. Fruit a beaked achenium. Seed with four cotyledons and a conspicuous plumule.—Floating herbs, with whorled leaves cut into numerous filiform segments. Flowers small and sessile, in the axils of the leaves.

1. CERATOPHYLLUM. *Linn.; Endl. gen.* 1829; *A. Gray in ann. lyc. New-York*, 4. *p.* 41. HORNWORT.

[From the Greek, *keras*, a horn, and *phyllon*, a leaf: so named on account of the forked leaves.]

Character same as of the order.

1. CERATOPHYLLUM ECHINATUM, *A. Gray.* *Rough-fruited Hornwort.*

Achenium elliptical, slightly compressed, with 3 short spines, the sides strongly muricated; margins slightly winged, not gibbous, armed with blunt teeth, which finally become weak spines or horns as long as the lateral spines (*T. & Gr.*). — *A. Gray, l. c.; Torr. & Gr. fl. N. Am.* 1. *p.* 56. C. demersum (wholly or in part) *of American botanists.*

Whole plant submersed, of a dark green color. Stem branching, filiform, jointed. Leaves in numerous whorls of 6 – 8, sessile, half an inch or an inch long, cut in a dichotomous or trichotomous manner; the segments serrulate, and mostly with 2 sharp teeth at the summit. Flowers minute, solitary, with a many-cleft involucre at the base, which is often described as a calyx. Anthers sessile, crowded in the centre of the involucre, 3-pointed at the summit. Achenium on a short stipe, oblong.

Ponds and slow-flowing streams. *Fl.* June – July. *Fr.* August.

ORD. XCIV. CALLITRICHACEÆ. *Link.* THE WATER-CHICKWEED TRIBE.

Flowers perfect, or sometimes by abortion monœcious or polygamous, destitute of both calyx and corolla, with a 2-leaved involucre, or naked at the base. Stamens single (or rarely 2), with an elongated slender filament and reniform one-celled? anther. Ovary 4-lobed, 4-celled, with a solitary ovule in each cell: styles 2, spreading. Fruit laterally compressed, 4-celled and 4-seeded, indehiscent. Embryo straight, in the axis of fleshy albumen.—Aquatic slender annual plants, with opposite entire leaves, and minute solitary axillary sessile flowers.

1. CALLITRICHE. *Linn.; Endl. gen.* 1830. *WATER CHICKWEED.*

[From the Greek, *kallos*, beautiful, and *thrix*, hair; in allusion to the slender stems.]

Character that of the order.

1. CALLITRICHE VERNA, *Linn.* *Common Water Chickweed.*

Leaves 3-nerved; upper ones aggregated, broader; fruit sessile, with 2 bracts at the base, each carpel bluntly keeled on the back.—*Linn. sp.* 1. *p.* 6; *Michx. fl.* 1. *p.* 2; *Nutt. gen.* 1. *p.* 3; *Arn. in Edinb. jour. nat. & geogr. sc.* 1. *p.* 426; *DC. prodr.* 3. *p.* 70. C. aquatica, *Smith in Engl bot. t.* 722; *Bigel. fl. Bost. p.* 2.

var. 1. *vulgaris:* leaves all elongated and obovate. — *DC. l. c.*

var. 2. *intermedia:* upper leaves spatulate-obovate; lower ones linear. — *Hoff. fl. Germ. p.* 2, ex *DC. l. c.; Torr. fl.* 1. *p.* 3; *Beck, bot p.* 123; *Darlingt. fl. Cest. p.* 1. C. intermedia, *Willd. sp.* 1. *p.* 29; *Pers. syn.* 1. *p.* 6. C. heterophylla, *Pursh, fl.* 1. *p.* 3; *Ell. sk.* 1. *p.* 4.

var. 3. *linearis:* leaves all linear, or the upper ones linear-elliptical. — *DC. l. c.* C. autumnalis, *Michx. fl.* 1. *p.* 2; *Torr. l. c.*, not of *Linn.* C. linearis, *Pursh, l. c.*

var. 4. *terrestris:* stem procumbent, rooting in mud or moist earth; leaves closely approximated, linear-oblong or elliptical-oblong.—C. terrestris, *Raf. in med. repos.* 11. *p.* 358; *Torr. fl.* 1. *p.* 4; *DC. l. c.* C. brevifolia, *Pursh, l. c.* C. verna, *var.* cæspitosa, *DC. l. c.?*

Stem very slender, varying in length with the depth of the water (the var. *terrestris* growing in patches, and resembling moss), consisting of two tubes, nearly simple. Uppermost leaves in var. 1. and 2. more or less obovate, crowded into a stellate tuft, and floating on the surface of the water; the rest diminishing in breadth downward, till they are quite linear. Flowers very minute, particularly those in the upper part of the stem. Bracts oblong, incurved, white. Stamens lateral, next the stem, finally 2 – 4 times as long as the ovary: anther 4-celled? Ovary 4-sided: styles subulate, distinct. Fruit consisting of four oblong carpels, united in pairs, so as to form two flattened disks, with a groove between them.

Ponds and slow-flowing streams (except the var. *terrestris*). April – August. The first variety is not common; the others are frequent. Some botanists consider what are usually regarded as the solitary perfect flowers in this genus, to consist of *two* closely approximated flowers; the sterile being next the stem, and the pistillate on the outside; and this is perhaps the proper view of their structure.

ORDER XCV. PODOSTEMACEÆ. *L. C. Rich.* THE RIVER-WEED TRIBE.

Flowers perfect, or by abortion diclinous, arising from a spathe. Calyx none, or of 2 – several sepals. Stamens 1, 2 or many, often monadelphous: anthers 2-celled. Ovary free, 2- (rarely 3-) celled, with numerous ovules attached to a central fleshy placenta: stigmas 2 – 3. Capsule ribbed, usually more or less pedicellate, opening by 2 – 3 valves which fall away from the dissepiment. Seeds numerous, without albumen. Embryo straight; the cotyledons plano-convex. — Herbaceous aquatic plants, with alternate leaves, which are sometimes entire, but usually cut into numerous irregular capillary segments. Flowers minute, axillary or terminal, sometimes solitary, at other times aggregated, spiked or racemed.

1. PODOSTEMUM. *Michx. fl* 2. *p.* 164; *Endl. gen.* 1832. *RIVER-WEED.*

[From the Greek. *pous, podos*, a foot, and *stemon*, a stamen; the stamens being apparently raised on a footstalk, in consequence of their filaments being united below.]

Spathe tubular, entire. Flower pedicellate. Calyx? consisting of two collateral scales. Stamens 2 (rarely 3): filaments united below: anthers 2-celled. Ovary 2-celled: styles 2, fleshy, stigmatose on the inside. Capsule 2-valved.—Aquatic plants growing on stones in the bottom of shallow streams, with finely dissected leaves and solitary axillary flowers.

1. PODOSTEMUM CERATOPHYLLUM, *Michx.* (Plate XCVIII.) *River-weed.*

Leaves dichotomously many-parted, the segments linear-setaceous; filaments united above the middle.—*Michx. l. c. t.* 44; *Pursh, fl.* 1. *p.* 3; *Nutt. gen.* 2. *p.* 202; *Ell. sk.* 2. *p.* 518; *Torr. compend. p.* 332; *Beck, bot. p.* 124; *Darlingt. fl. Cest. p.* 10. P. abrotanoides, *Nutt. in jour. acad. Phil.* 7. *p.* 105. Lacis ceratophylla, *Bongard, gen. Lacis revis. p.* 10, (ex *mém. de l'acad. St. Petersb.* 6 *ser. tom.* 3); *Hook. in comp. bot. mag.* 2. *p.* 23. *t.* 20.

Perennial? Whole plant coriaceous, and of an olive-green color. Root consisting of fleshy

processes, by which the plant adheres to pebbles with great tenacity. Stem 1 – 4 inches long, terete, smooth, creeping ; the branches erect. Leaves numerous, with stipular processes at the base of the petioles, usually somewhat rigid, varying in length, usually half an inch or an inch long, but in favorable situations 3 – 5 inches or more. Spathe cylindrical, at first enclosing and concealing the flower, but finally bursting irregularly at the summit ; the stipe or peduncle included in the spathe, or more or less exserted. Calyx, or involucre, of two subulate flesh-colored leaves, one on each side of the base of the united filaments. Stamens usually 2 ; the lower half or two-thirds of the filaments united into one. Ovary dark green, with 4 strong elevated purple lines on each side : stigmas at first curved towards the stamens, but finally spreading. Capsule oval, ribbed. Seeds numerous, imbricated on the thick placenta.

At the bottom of shallow pebbly streams. Black River, near Watertown (*Dr. Gray*) ; stony streams near Newburgh (*Mr. Halsted*). *Fl.* July. *Fr.* August.

GROUP 6. *Flowers monœcious or diœcious, sometimes furnished with petals as well as calyx, but often destitute of both, not amentaceous. Ovary* 2 – *several-celled, with one or two ovules in each cell. Fruit capsular or drupaceous, with two or more cells.*

ORDER XCVI. EUPHORBIACEÆ. *Juss.* THE SPURGE TRIBE.

Flowers mostly diœcious or monœcious. Calyx 3- or several-cleft (sometimes wanting), often with scaly or glandular appendages. STERILE FL. Stamens one or many, distinct or monadelphous : anthers 2-celled. FERTILE FL. Ovary single, 2 – 3- or many-celled : ovules solitary or in pairs, suspended from the inner angle of the cell : stigmas equal in number to the cells, sometimes combined, often 2-cleft. Fruit capsular, separating from the persistent axis into 2, 3 or more cells or cocci, which commonly open elastically by one or both sutures. Seeds very often furnished with a caruncle or arillus. Embryo large, enclosed in fleshy albumen : cotyledons flat. — Herbs, shrubs, or (in warm climates) trees, often with milky acrid juice. Leaves commonly simple, and furnished with stipules. Inflorescence various.

1. ACALYPHA. *Linn.; Adr. Juss. Euphorb. p.* 45. *t.* 14. *f.* 46; *Endl. gen.* 2787.

THREE-SEEDED MERCURY.

[The Greek name for the *Nettle*; which this genus much resembles.]

Flowers monœcious. STERILE FL. very minute. Calyx 4-parted. Stamens 8 – 16: filaments short, united at the base: anther-cells distinct, vermiform, suspended from near the summit of the filament. FERTILE FL. Calyx 3-parted. Styles 3, irregularly and finely laciniate. Capsule tricoccous; the carpels roundish, 2-valved, 1-seeded. Seeds roundish, strophiolate. — Mostly herbs, but sometimes shrubs or trees, with alternate stipulate serrate leaves. Flowers axillary or terminal, with an involucre-like bract at the base; the sterile glomerate, in stipitate spikes; the fertile 1 – 3, seated in a large usually lobed bract.

1. ACALYPHA VIRGINICA, *Linn.* *Common Three-seeded Mercury.*

Herbaceous; leaves ovate, obtusely serrate, on long petioles; flowers axillary; bracts somewhat stipitate, roundish-cordate, concave, unequally and incisely lobed; staminate spike shorter than the bract, or only slightly exserted, with the fertile flowers at the base. — *Linn. sp.* 2. *p.* 1003; *Michx. fl.* 2. *p.* 215; *Pursh, fl.* 2. *p.* 604; *Ell. sk.* 2. *p.* 645; *Bigel. fl. Bost. p.* 364; *Torr. compend. p.* 361; *Beck, bot. p.* 311; *Darlingt. fl. Cest. p.* 550.

var. *angustifolia*: leaves oblong-lanceolate, crenately serrate, on short petioles; sterile spikes longer than the bracts.

Annual. Stem 6 – 18 inches high, more or less pubescent, slender, terete, sparingly branched. Leaves 1 – 3 inches long and 1 – 1½ inch wide (in var. *angustifolia* 3 – 6 lines), pubescent, except when the plant grows in shady places, when they are nearly smooth: petiole from three-fourths of an inch to nearly an inch long; in the *var.* scarcely half as long. Spikes androgynous, one or two in each axil, sometimes proliferous. Bract leafy, cleft below the middle into 5 – 9 unequal lanceolate lobes, enclosing 1 – 3 sessile pistillate flowers and a spike of staminate flowers; of the pistillate, usually only one is fertile: styles cut into 3 – 5 fine segments. Staminate spike on a rather stout peduncle, which sometimes bears a second bract which is smaller than the first, enclosing one or more pistillate flowers. Sterile flowers minute, nearly sessile. Segments of the calyx ovate. Stamens about 10. Capsule hairy; the carpels opening elastically by two valves. Seeds ovoid, brownish, often spotted, with a crest or caruncle at the hilum.

Fields, open woods and roadsides; very common; the var. *angustifolia* on the Island of New-York. *Fl.* July – August. *Fr.* September.

2. EUPHORBIA. *Linn.; Adr. Juss. Euphorb.* 57. *t.* 17. *f.* 61; *Endl. gen.* 5766.
SPURGE.

[Named after *Euphorbus*, physician to Juba, king of Mauritania, who brought the plant into use.]

Flowers monœcious, both sterile and fertile included in a 4 – 5-lobed campanulate or turbinate involucre, the lobes of which usually alternate with peltate glands. STERILE FL. several, destitute of calyx and corolla, each consisting of a single stamen, the filament of which is articulated to a pedicel. FERTILE FL. solitary, naked or sometimes calyculate, elevated on a long peduncle: styles 3, 2-cleft, or rarely united into one: stigmas 6 (or rarely 3, and 2-lobed). Capsule tricoccous; the carpels one-seeded, opening elastically by two valves. Seeds closely invested with a thin arillus, often carunculate. — Plants with a milky juice, herbaceous (as are all our species) or shrubby, of various habit. Stems often dichotomous. Leaves mostly alternate; the floral ones often verticillate. Peduncles axillary, or umbellate in the forks of the stem.

The involucre was regarded by Linnæus as a lobed calyx, containing numerous stamens; and the glands, or their appendages, as petals.

* *Leaves alternate.*

1. EUPHORBIA HELIOSCOPIA, *Linn.* *Wart-wort Spurge.*

Smooth; stem erect, simple below; umbel 3 – 5-cleft, the divisions simple or 2 – 3 times forked; leaves alternate, broadly obovate-cuneate, obtuse, serrulate, the bracteal ones broader; involucres oblong-turbinate, terminal and in the forks of the umbel, nearly sessile; fruit even; seeds rugose-reticulate.—*Linn. sp.* 1. *p.* 454; *Bigel. fl. Bost. p.* 189. E. obtusata, *Pursh, fl.* 2. *p.* 607; *Torr. compend. p.* 332; *Beck, bot. p.* 312.

Annual. Stem 8 – 15 inches high, umbellately branched at the summit; the divisions often compoundly 2 – 3-forked. Leaves three-fourths of an inch to an inch and a half long, membranaceous, sometimes retuse, entire towards the base, without stipules. Bracts (involucre, *Linn.*) often nearly orbicular. Involucres thin and membranaceous, 4 – 5-lobed; the lobes short and laciniate. Glands about 4, stipitate, peltate, orbicular, alternating with the lobes of the involucre. Sterile flowers rather numerous. Styles slightly 2-cleft; the lobes capitate. Capsule green; the carpels somewhat globose. Seeds ovoid-spherical, brown, dull, strongly reticulated with elevated lines.

Sandy fields and rocky banks of rivers. New-Paltz, Ulster county (*Mr. J. Carey*); shore of Lake Erie (*Dr. Sartwell*); western part of the State (*Dr. Knieskern*). July – September. I see no character of sufficient importance to distinguish *E. obtusata* of Pursh, from the European *E. helioscopia*.

2. EUPHORBIA PLATYPHYLLA, *Linn.* *Broad-leaved Spurge.*

Leaves elliptical or oblanceolate, mostly acute, slightly hairy, the floral ones roundish-cordate; umbel 3 – 5-cleft, the divisions 2 – 3 times forked; involucres hemispherical; fruit papillose-muricate and somewhat hairy, the carpels convex on the back; seeds obovoid, compressed, smooth and even. — *Linn. sp.* (ed. 2.) 1. *p.* 660; *Rœp. enum. Euphorb. Germ. p.* 61; *Oakes, cat. pl. Verm. p.* 24.

Annual. Stem about a foot high, erect, smooth. Leaves an inch or more in length, tapering to the base, sessile, smooth above, sparsely hairy underneath, finely serrulate except toward the base, where they are entire; the bracteal ones shorter but very broad, closely sessile and somewhat clasping, mucronate. Involucres nearly sessile, hairy externally; the lobes small, hairy-ciliate. Glands large, transversely elliptical, entire. Sterile flowers rather numerous. Styles 2-cleft; the lobes obtuse. Capsule sprinkled with small pointed warts. Carpels with a shallow groove down the back. Seeds brown when ripe, with a conspicuous caruncle.

Near Portland Harbor, Lake Erie (*Dr. Knieskern*). Perhaps an introduced plant. Mr. Oakes found it on the islands of Lake Champlain.

3. EUPHORBIA COROLLATA, *Linn.* (Plate XCIX.) *Flowering Spurge.*

Stem simple, erect; leaves varying from spatulate- to ovate-oblong, obtuse; umbel about 5-cleft, the divisions 2 – 3-forked, nearly naked; glands of the involucre with a large obovate petaloid spreading appendage, the proper lobes minute, inflexed; capsule and seeds smooth. — *Linn. sp.* 1. *p.* 459; *Walt. fl. Car. p.* 145; *Michx. fl.* 2. *p.* 210; *Pursh, fl.* 2. *p.* 607; *Ell. sk.* 2. *p.* 659; *Bot. mag. t.* 2992; *Beck, bot. p.* 313; *Darlingt. fl. Cest. p.* 517.

Perennial. Stem 1½ – 3 feet high, slender, nearly smooth. Leaves 1 – 2 inches long and 4 – 8 lines wide, somewhat erect, smooth above, pale and a little hairy underneath. Primary rays of the umbel mostly 5, slender; the divisions often compoundly forked. Peduncles 3 – 4 lines long. Involucre turbinate: glands transversely elliptical, usually 5, each seated on a white spreading membranaceous appendage; the proper lobes alternating with the appendages, small, laciniate. Sterile flowers numerous. Fertile flower at length exserted on its pedicel. Capsule rather large; the carpels obtuse on the back. Styles thick, deeply 2-cleft. Seeds obovoid-oblong.

Rocky banks of the Chemung River (*Dr. Knieskern*). July – August. This plant is a favorite medicine among the western Indians. It is emetic, cathartic and diuretic (See *Wood & Bache, U. S. Dispens. p.* 300).

** *Leaves opposite.*

4. EUPHORBIA HYPERICIFOLIA, *Linn.* *Upright Spotted Spurge.*

Stem erect-spreading, with dichotomous spreading branches; leaves on short petioles, oblong-oval, somewhat falcate, serrate; peduncles solitary in the axils, and corymbose at the extremity of the branches; glands of the involucre with petaloid small appendages; capsules

even ; seeds obovate, obtusely 4-angled, smooth.—*Linn. sp.* 1. *p.* 454 ; *Michx. fl.* 2. *p.* 212; *Pursh, fl.* 2. *p.* 605 ; *Ell. sk.* 2. *p.* 653 ; *Bigel. fl. Bost. p.* 90 ; *Torr. compend. p.* 331 ; *Beck, bot. p.* 312 ; *Hook. exot. fl. t.* 36, *and fl. Bor.-Am.* 2. *p.* 140 ; *Darlingt. fl. Cest. p.* 516.

β. hirsuta : stem hairy, more slender, often nearly prostrate. — *Torr. l. c.* E. maculata, *Michx. l. c. ; Pursh, fl.* 2. *p.* 605 ; *Ell. l. c.*, not of *Linn.*

Annual. Stem 8 – 18 inches high, nearly smooth or pubescent, with unequal forked branches from near the root, sometimes almost prostrate. Leaves half an inch to nearly an inch long, unequal at the base, often marked with blotches of a dark purplish color above, rather obtuse, sharply serrate : petioles about half a line long, with very short stipules between them. Involucres on short peduncles, cylindrical-turbinate, 4-lobed ; the lobes laciniate. Glands 4 – 5, seated on very small, shortly pedicellate, white, roundish or emarginate appendages. Styles deeply 2-cleft ; the segments slender. Capsule even, sometimes pubescent. Arillus of the seed emitting a mucus when placed in water.

Dry fields, hill-sides, and cultivated grounds ; common. July – September.

5. EUPHORBIA MACULATA, *Linn.* *Milk Purselane. Small Spurge.*

Prostrate, pubescent, dichotomously much branched ; leaves opposite, oval, remotely serrulate ; peduncles axillary, solitary or somewhat clustered, very short ; glands 4, seated on small petaloid appendages, transversely elliptical ; capsule even ; seeds obovate-oblong, smooth.—*Linn. sp.* 1. *p.* 455 ; *Bigel. fl. Bost. p.* 189 ; *Torr. compend. p.* 331 ; *Beck, bot. p.* 312 ; *Darlingt. fl. Cest. p.* 316. E. depressa, *Torr. in Ell. sk.* 2. *p.* 655. E. thymifolia, *Michx. fl.* 2. *p.* 212, also of *Linn.?*

Annual. Stem lying flat on the ground, and forming patches often a foot or more in diameter. Leaves 3 – 6 lines long, closely approximated, mostly obtuse, unequal at the base, smoothish and marked with dull purplish blotches above, more or less hairy underneath : petioles scarcely a line long. Stipules subulate, between the petioles, distinct. Involucres somewhat crowded on short lateral branches, turbinate, 4-lobed ; the glands sessile ; their appendages white, somewhat reniform, obscurely 3-toothed : proper lobes minute, incurved. Staminate flowers few (4 – 5). Capsule hairy ; the carpels rather acutely angled on the back. Arillus of the seeds emitting a gelatinous coat when moistened.

Fields, cultivated grounds and roadsides, usually in dry soils ; common. July – September.

Many years ago, I sent specimens of this and the preceding species to Sir J. E. Smith, who assured me that the former agrees precisely with the original *E. hypericifolia* of *Herb. Linn.*, and that the latter is as certainly *E. maculata*. He also stated, that "Linnæus seems subsequently to have confounded his original smooth specimen of *E. hypericifolia* (numbered 17, as in *sp. pl. ed.* 1) with *E. maculata ;* not that they are at all alike, nor is there any foundation for his remark in the 2nd mantissa, p. 392. The 1st edition of the *Sp. pl.* is here decisive authority. The original specimen of *E. maculata* is smooth, but there is a downy variety from Jamaica, from Browne's herbarium."

6. EUPHORBIA IPECACUANHA, *Linn.* *Wild Ipecac.*

Procumbent or sometimes assurgent, smooth; leaves opposite, varying from obovate to linear-lanceolate; peduncles solitary, in the forks of the stem, elongated; glands large, reniform; capsules very minutely papillose; seeds ovoid, smooth. — *Linn. sp.* 1. *p.* 455; *Michx. fl.* 2. *p.* 212; *Bot. mag. t.* 1494; *Pursh, fl.* 2. *p.* 606; *Nutt. gen.* 2. *p.* 227; *Ell. sk.* 2. *p.* 657; *Bart. veg. mat. med. t.* 18; *Torr. compend. p.* 331; *Beck, bot. p.* 312.

Perennial. Root tapering, very long. Stem often partly buried in the sand; the branches 6 – 12 inches long. Leaves extremely variable, sometimes quite linear, but usually more or less obovate, obtuse or retuse, often of a dull purple color; the broader ones an inch or an inch and a half long; the narrower forms commonly longer. Peduncles 8 – 12 lines long, slender. Involucre turbinate; the lobes small and laciniate: glands without appendages, sessile. Sterile flowers numerous. Capsule much exserted; the carpels obtuse on the back. Arillus of the seed becoming gelatinous in water.

Sandy fields near Babylon on Long Island (*Dr. Knieskern*). June – July. This plant, as truly remarked by Pursh, has a deeper root than most other perennial herbs. It is emetic, and is sometimes used as a substitute for the Ipecacuanha of the shops.

7. EUPHORBIA POLYGONIFOLIA, *Linn.* *Seaside Spurge.*

Procumbent, dichotomously much branched and very smooth; leaves oblong and linear-oblong, petiolate; stipules simple or nearly so; peduncles solitary in the forks, short; glands transversely oblong, stipitate; lobes 5, acuminate, entire; capsule and obovoid seeds smooth. — *Linn. sp.* 1. *p.* 455; *Jacq. collect. suppl. t.* 13. *f.* 3, ex *Pursh, fl.* 2. *p.* 606; *Ell. sk.* 2. *p.* 656; *Bigel. fl. Bost. p.* 189; *Torr. compend. p.* 331; *Beck, bot. p.* 312; *Hook. fl. Bor.-Am.* 2. *p.* 140. E. maritima, *Nutt. in Am. phil. trans.* (n. ser.) 5. *p.* 171.

Annual. Stem diffuse; the branches 4 – 10 inches long. Leaves about half an inch long and scarcely two lines wide, rather obtuse, oblique and sometimes a little cordate at the base: petiole nearly a line in length. Stipules subulate, entire or simply cloven. Peduncles rather longer than the petioles. Involucre turbinate, with 4 glands on short stipes; the lobes erect. Styles short, 2-cleft. Capsule obtusely carinate at the angles. Seeds with a rather loose pale arillus, which emits abundance of long fibro-gelatinous threads when moistened.

Sandy shores of Long Island, Staten Island, and of the Hudson as far as the salt water extends; also on Lake Erie (*Dr. Knieskern*). July – August.

ORDER XCVII. EMPETRACEÆ. *Nuttall.* THE CROWBERRY TRIBE.

Flowers dioecious or polygamous. Calyx consisting of several imbricated sepals, or else of bract-like scales, of which the innermost are petaloid. Stamens as numerous as the inner sepals, persistent. Ovary free, 2 – 9-celled, with a single erect ovule in each cell: style short or almost wanting: stigma radiately lobed; the lobes often laciniate. Fruit a berry-like drupe, or sometimes dry, containing 2 – 9 bony nucules. — Low heath-like evergreen shrubs, with crowded narrow leaves, and small flowers in the upper axils. Seeds with a membranaceous testa, albuminous.

1. EMPETRUM. *Tourn.; Don in Edinb. new phil. jour.* 2. *p.* 82; *Endl. gen.* 5761.

CROWBERRY.

[From the Greek, *en*, in, and *petros*, a stone; because the plants mostly grow in rocky places.]

Calyx consisting of several imbricated scales, of which the three innermost are commonly regular-spreading and petaloid. STERILE FL. Stamens 3. Ovary rudimentary, with a many-cleft stigma. FERTILE FL. Stamens none. Ovary globose: stigma nearly sessile, somewhat peltate, with 6 – 9 laciniate rays. Fruit globose, with 6 – 9 nucules. — Low shrubby plants, with the habit of the order. Berries black or red.

1. EMPETRUM NIGRUM, *Linn.* *Common Crowberry.*

Procumbent; leaves linear-oblong; berries black. — *Linn. sp.* 2. *p.* 1022; *Engl. bot. t.* 526; *Michx. fl.* 2. *p.* 255; *Pursh, fl.* 1. *p.* 93; *Bigel. fl. Bost. p.* 365; *Torr. compend. p.* 372; *Hook. fl. Bor.-Am.* 2. *p.* 140.

Much branched and diffuse. Leaves crowded, dark green, about three lines long, obtuse, thick; the margins so much revolute as to meet at the back; the spurious margins rather acute, rough. Flowers very small, axillary towards the summit of the branches, purplish. Stamens exserted. Fruit the size of a peppercorn.

Summit of Mount Marcy and Mount McIntyre, Essex county; also on the highest parts of the Whiteface Mountain (*Dr. Emmons & Prof. Hall*). *Fl.* End of June. *Fr.* August. This species occurs also on the White Hills, and in the colder parts of British America. It seems to be identical with the European plant.

GROUP 7. *Flowers monœcious or diœcious; the sterile, and sometimes the fertile also, in aments, or in heads or spikes, either furnished with a calyx or achlamydeous. Ovary several-celled, but the fruit always (except in* LIQUIDAMBAR) *one-celled. — Trees or shrubs, or (in* URTICACEÆ) *herbs.*

ORDER XCVIII. JUGLANDACEÆ. *DC.* THE WALNUT TRIBE.

Flowers monœcious, incomplete. STERILE FL. in aments. Calyx adnate to the bracts or scales of the ament, oblique, unequally 2 – 6-parted. Stamens indefinite. FERTILE FL. few, clustered or sometimes racemose. Calyx adherent to the ovary; the limb minute, 3 – 5-parted. Petals none, or rarely 3 – 5 and minute. Ovary 2 – 4-celled below, 1-celled above, with a single ovule: styles 1 – 2, very short: stigmas 2 – 4, unequal, elongated, sometimes discoid and lobed. Fruit drupaceous; the epicarp fibrous-fleshy or coriaceous, not opening, or separating into 4 valves: endocarp (nut-shell) bony, smooth or rugose-furrowed, 2 – 4-celled below, 1-celled above. Seed without albumen, 4-lobed: the cotyledons fleshy and oily, sinuous: radicle very short.— Trees, with alternate pinnated leaves, destitute of stipules.

1. JUGLANS. *Linn.* (excl. spec.); *Nutt. gen.* 2. *p.* 220; *Endl. gen.* 5890. *WALNUT.*

[So named from the Latin, *Jovis glans*, or the nut of Jupiter; on account of its excellence.]

STERILE FL. Aments simple, cylindrical, imbricated. Bracts entire. Calyx 5 – 6-parted. Stamens 8 – 40. FERTILE FL. solitary or several together on a peduncle at the extremity of the branches. Bracts none or minute. Calyx 4-cleft or 4-toothed. Corolla 4-petalled, inserted at the summit of the calyx, between its teeth. Styles 2, very short: stigmas 2, somewhat clavate. Drupe fibrous-fleshy, indehiscent; the nut-shell rugose and irregularly furrowed. — Trees, with unequally pinnate leaves. Sterile and fertile flowers proceeding from separate buds. Pith separating into numerous thin disks.

1. JUGLANS NIGRA, *Linn.* *Black Walnut.*

Leaflets ovate-lanceolate, somewhat cordate at the base, the under surface and petioles slightly pubescent; drupe globose, roughly dotted, spongy; nut nearly globose, corrugated. —*Linn. sp.* 2. *p.* 997; *Michx. fl.* 2. *p.* 191; *Michx. f. sylv.* 1. *t.* 30; *Pursh, fl.* 2. *p.* 636; *Nutt. gen.* 2. *p.* 220; *Ell. sk.* 2. *p.* 622; *Torr. compend. p.* 357; *Beck, bot. p.* 335; *Darlingt. fl. Cest. p.* 543; *Loud. enc. trees & shr. p.* 734.

A tree 30 – 60 feet high, with a trunk 1 – 2 feet or more in diameter (in the Western States the younger Michaux found it from 3 to 6 or 7 feet in diameter); when growing alone, forming a large spreading head; the bark thick and blackish. Leaves a foot or more in length; the leaflets in 6 – 9 pairs with an odd leaflet, 2 – 4 inches long, on short partial footstalks, serrate. Sterile aments pendulous, cylindrical; the flowers at length rather distant. Scales or bracts ovate, acute, hairy. Calyx orbicular, unequally and obtusely 5-cleft. Stamens 30 – 40: filaments very short: anthers oblong; the cells distinct. Fertile flowers 2 – 4 together at the extremity of the branches. Ovary cylindrical-ovate, crowned with the small 4-toothed limb of the calyx and the 4 petals: stigmas 2, nearly sessile, large, diverging, somewhat clavate, lacerately fringed on the upper surface. Drupe about 2 inches in diameter, sometimes a little ovoid, greenish yellow when ripe, spongy, decaying without splitting into valves; the nut sulcate, with irregular obtuse ridges.

Rich woodlands; rare above the Highlands, and in the northwestern parts of the State; occasionally found in the southwestern counties. *Fl.* May. *Fr.* October. The heart-wood is of a purplish brown color when fresh, but becomes blackish with age. It is much esteemed for cabinet work. The immature fruit emits a strong resinous odor when bruised. The ripe kernel is sweet and wholesome.

According to Loudon, there is in the gardens of the Trianon at Versailles, a hybrid between this species and *Juglans regia*, which partakes in an equal degree of the properties of both, and has ripened fruit from which young plants have been raised possessed of similar characters. A very large tree of this kind existed until lately on the grounds of Clement Moore, Esq., on the Island of New-York. Nuts taken from it produced thrifty plants in Prince's garden at Flushing. This tree was first observed by Major J. Le Conte, and is noticed in my catalogue of New-York plants (1819) as *Juglans hybrida*.

2. JUGLANS CINEREA, *Linn.* *Butternut. White Walnut.*

Leaflets oblong-lanceolate, rounded at the base, softly pubescent underneath, the petioles villous; drupe ovoid-oblong, pubescent and viscid; nut elliptical-oblong, acuminate, deeply sculptured and rough. — *Linn. sp.* (ed. 2.) 2. *p.* 1415; *Michx. fl.* 2. *p.* 191; *Pursh, fl.* 2. *p.* 636; *Ell. sk.* 2. *p.* 623; *Bigel. med. bot. t.* 32, *and fl. Bost. p.* 352; *Torr. compend. p.* 357; *Beck, bot. p.* 335; *Darlingt. fl. Cest. p.* 543. J. cathartica, *Michx. fl. sylv. t.* 31.

A tree 20 – 40 feet high and 1 – 2 feet in diameter; the branches covered with a smoothish gray bark. Leaflets in 7 – 8 pairs with an odd one, about 3 inches long, acuminate, serrate: common petiole 12 – 15 inches long. Sterile flowers pendulous from the last year's shoots, 3 – 5 inches long. Calyx oblong, deeply 3-cleft. Stamens 8 – 10; the anthers oblong, nearly sessile. Fertile flowers 3 – 7 in a short terminal spike, sessile. Limb of the calyx obscurely 4-toothed. Petals 4, narrowly lanceolate. Ovary sessile, viscidly pubescent: style short: stigmas 2, rose-colored, large, elongated, pubescent and fimbriate. Fruit sessile on an elongated common peduncle 2 – 3 inches long, at first green, but brown when ripe, very viscid.

Nut carinate at the sutures, with deep indentations and sharp ragged ridges; the kernel very oily, agreeably tasted when fresh, but soon becoming rancid.

Rich woods and banks of rivers; common. *Fl.* May. *Fr.* End of September. The wood of this tree is of a reddish hue, light, and not so strong as that of the Black Walnut. An extract is prepared from the inner bark, which is much esteemed as a laxative medicine. The sap affords sugar; and the young fruit is used for pickles.

2. CARYA. *Nutt. gen.* 2. *p.* 220; *Endl. gen.* 5889. *HICKORY.*

[*Karya* is an ancient Greek name of the Walnut.]

STERILE FL. Aments mostly in threes or deeply 3-parted, slender. Bracts none. Calyx 3-parted. Stamens 3 – 8: anthers sessile. FERTILE FL. 2 – 3 together at the extremity of the branches. Calyx a small 4-cleft limb. Corolla none. Drupe coriaceous or somewhat fleshy, 4-valved: nut oval, somewhat quadrangular, smooth. — Trees, with oddly pinnated leaves; the pubescence stellate. Sterile and fertile flowers proceeding from the same buds. The wood is compact, very strong and elastic; the duramen is dark-colored, and the alburnum white. The pith is continuous.

1. CARYA ALBA, *Nutt.* *Shell-bark Hickory. Kiskytom.*

Leaflets mostly 5, obovate- and oblong-lanceolate, acuminate, slightly serrate, villous underneath; aments somewhat pubescent; fruit depressed-globose; pericarp thick, furrowed at the sutures; nut compressed. — *Nutt. gen. l. c.; Ell. sk.* 2. *p.* 624; *Torr. compend. p.* 357; *Beck, bot. p.* 336; *Darlingt. fl. Cest. p.* 544; *Hook. fl. Bor.-Am.* 2. *p.* 143. C. squamosa, *Bart. fl. Phil.* 2. *p.* 179. Juglans alba, *Linn. sp.* 2. *p.* 997?; *Michx. fl.* 2. *p.* 193; *Pursh, fl.* 2. *p.* 637. J. compressa, *Willd. sp.* 4. *p.* 458; *Ait. Kew.* (ed. 2.) 5. *p.* 297. J. squamosa, *Michx. f. sylv.* 1. *t.* 36; *Bigel. fl. Bost. p.* 354.

A tree 50 – 80 feet high, with a trunk 10 – 18 inches in diameter; the bark very rough, in consequence of the outer portions exfoliating in long narrow plates, which adhere in the middle, while they are detached and more or less elevated at each end. Leaflets mostly in 5 (sometimes in 7) pairs, 4 – 8 inches long; the lower pair smaller, finely serrate; the lateral ones sessile or nearly so, and more or less obtuse at the base; the terminal cuneate at the base, supported on a footstalk 3 – 4 lines long: pubescence of the petiole partly stellate. Sterile aments pendulous, 3 together or 3-parted, long and slender; the two lateral ones with a large lanceolate bract at the base. Calyx without bracts at the base, somewhat equally 3-cleft: middle segment longer, lanceolate and acuminate; the lateral ones obtuse. Anthers 4, large, pubescent. Fertile flowers 2 – 3 together on a terminal peduncle. Drupe nearly 2 inches in diameter, depressed at the centre, and with a groove at each suture; the valves

nearly half an inch thick. Nut about an inch long, whitish, compressed and angular, the breadth often equal to the length: shell thin and fragile.

Rich moist woods; common. *Fl.* May. *Fr.* October. The nuts of this species are more esteemed than those of the other hickories, except the *C. sulcata*. The wood is very strong and elastic; and being easily split, is often used for making baskets. It composes a large portion of the hickory sold for fuel in New-York and other large towns.

2. CARYA TOMENTOSA, *Nutt.* *White-heart Hickory. Mocker-nut.*

Leaflets mostly 7, oblong- and obovate-lanceolate, acuminate, slightly serrate, roughly pubescent underneath; sterile aments hairy; drupes globose-ovoid or oblong; nut somewhat 6-angled, the shell thick and very hard. — *Nutt. gen.* 2. *p.* 220; *Beck, bot. p.* 336; *Darlingt. fl. Cest. p.* 546. Juglans tomentosa, *Michx. fl.* 2. *p.* 192; *Michx. sylv.* 1. *t.* 35; *Pursh, fl.* 2. *p.* 637. J. alba, *Willd. sp.* 4. *p.* 457; *Bigel. fl. Bost. p.* 353, not of *Linn.?*

var. *integrifolia* (Plate C.): leaflets 3 – 4 pairs, nearly entire; fruit small.

A tall tree; the trunk being often 50 to 80 feet high, and the diameter 12 – 18 inches. Bark rough and cracked, but not scaly. Leaflets 2 – 6 inches long; the lower pairs smaller than the others; terminal one cuneate at the base, and stalked: petiole and under surface of the leaves clothed with a roughish stellate pubescence. Sterile aments long and pendulous, with a pair of connate bracts at the base. Middle lobe of the calyx-scales longer and acute; lateral ones obtuse, and sometimes toothed. Anthers 3 – 4. Pistillate flowers 2 – 3 together. Limb of the calyx 4-cleft; the lobes lanceolate, conspicuous. Drupes $1\frac{1}{2}$ – 2 inches or more in length (in the variety much smaller), roundish or a little oblong; the valves scarcely more than half as thick as in the preceding species. Nut light brown; the kernel good, but small.

Fertile moist woods; frequent. *Fl.* May. *Fr.* October. The wood of this species is the best of all the hickories for fuel. It is white throughout, until it becomes 6 – 8 inches in diameter. In consequence of the abundance of its sweet sap, it is liable to the depredations of insects, particularly the larvæ of *Callidium flexuosum*. (See a figure of the insect in Michaux's plate, *l. c.*)

3. CARYA GLABRA. (Plate CI.) *Pig-nut. Broom Hickory.*

Leaflets about 7, lanceolate, acuminate, acute at the base, smooth on both sides; drupes pyriform or nearly globose, the valves thin; nut compressed, hard. — Juglans glabra, *Muhl. in Willd. sp.* 4. *p.* 458, *and cat. p.* 92; *Bigel. fl. Bost. p.* 354. J. porcina, *Michx. sylv.* 1. *p.* 38; *Pursh, fl.* 2. *p.* 638; *Muhl. cat. l. c.* J. obcordata, *Willd. l. c.* Carya porcina, *Nutt. gen.* 2. *p.* 222; *Ell. sk.* 2. *p.* 627; *Beck, bot. p.* 336; *Darlingt. fl. Cest. p.* 546.

Trunk 40 – 100 feet high and 12 – 18 inches in diameter (much larger in the Southern and Western States), with an even bark. Leaflets mostly 7, but sometimes 9 or only 5, 2 – 5 inches long, with a long acumination, serrate; the under surface sometimes a little pubescent,

particularly when young; the terminal leaflet with a tapering cuneate base. Sterile aments 3 – 4 inches long, somewhat pubescent; the bracts at their junction linear-lanceolate, spreading. Calyx-scales somewhat equally 3-lobed; the lateral lobes obtuse; middle one acute: anthers hairy, 4-celled. Drupes of two forms, which are pretty constant in the same tree: one of them pyriform, and resembling small unripe figs; the other roundish-obovate, splitting about half way down into four valves, which are coriaceous and rather thin. Nut slightly angular; the kernel small, but rather sweet.

Rich woodlands, in rather dry soil. *Fl.* May. *Fr.* October. The wood of this tree is considered the toughest of all the hickories. It is the kind most frequently used for making splint brooms. Michaux remarks that it is distinguished in the winter from other species of the genus, by its brown slender shoots.

4. CARYA AMARA, *Nutt.* *Bitter-nut. Swamp Hickory.*

Leaflets 7 – 9, oblong-lanceolate, acuminate, conspicuously serrate, smooth on both sides; drupes ovoid-spherical, with prominent sutures above; nuts smooth and even, with a thin brittle shell.—*Nutt. gen.* 2. *p.* 220; *Ell. sk.* 2. *p.* 626; *Beck, bot. p.* 336; *Hook. fl. Bor.-Am.* 2. *p.* 144. Juglans amara, *Michx. f. sylv.* 1. *t.* 33.

A large tree. Leaflets mostly 7, and sometimes as few as 5; the lateral one and upper pairs 4 – 6 inches long, rather broad at the base, sharply serrate, of a deep green color. Sterile aments long and slender, growing from the sides of the young shoots. Drupes dark green, an inch and a half long, coriaceous; the valves separating about half way down. Nut obcordate; the shell very thin: kernel bitter and astringent.

Wet woods, and on the borders of rivers and swamps; frequent. *Fl.* May. *Fr.* October. The wood of this species is considered as not equal in strength to the other hickories, and far inferior to them for fuel.

Besides the above species, it is probable that *C. sulcata*, Nutt. (Juglans laciniosa, *Michx. f. sylv.*) is a native of New-York, but I have not found it within the limits of the State. The hickories are extremely difficult to determine without the ripe fruit. According to Michaux, the *Bitter-nut* may be known in winter by its large yellow naked buds.

ORDER XCIX. CUPULIFERÆ. *Rich.* — THE NUT TRIBE.

Flowers usually monœcious. STERILE FL. in aments, with a scale-like or regular calyx, and the stamens equal in number to its lobes, or 2 – 3 times as many. FERTILE FL. solitary, 2 – 3 together or clustered, seated in an involucre which is usually echinate or scaly externally, and encloses the fruit at maturity, or forms a cup at its base. Calyx adherent to the ovary, the summit of which is crowned with its minute toothed limb. Ovary 2 – 3- (rarely 6-) celled, with 1 – 2 pendulous ovules in each cell, becoming in fruit a one-celled one-seeded nut. Albumen none. Embryo with thick fleshy cotyledons, and a short often retracted radicle. — Trees or shrubs, with alternate simple feather-veined leaves and deciduous stipules.

CONSPECTUS OF THE GENERA.

1. OSTRYA. Sterile flowers in cylindrical aments, without bracts; each flower consisting of a fringed scale and about 12 stamens: filaments branched. Fertile flowers in close strobiles. Involucral scales in pairs, growing together at their opposite edges, and forming an inflated covering to the fruit.
2. CARPINUS. Sterile flowers in cylindrical aments, without bracts; each flower consisting of a scale and about 12 stamens: filaments simple. Fertile flowers in loose strobiles. Involucral scales in pairs, free, 3-lobed, finally large and foliaceous.
3. CORYLUS. Sterile flowers in cylindrical aments; the scales 3-lobed, each consisting of a bract and two sepals. Stamens 8. Fertile flowers in a terminal scaly bud. Nut finally enclosed in a lacerated involucre.
4. QUERCUS. Sterile flowers in slender pendulous aments. Calyx 6 – 8-parted. Stamens 5 – 10. Fertile flowers in axillary buds, or sessile on a rachis. Involucre of numerous imbricated scales, at length forming an indurated cup which surrounds the base or sides of the nut.
5. FAGUS. Sterile flowers in a loose pedunculate pendulous head, with minute bracts. Calyx campanulate, 5 – 6-cleft. Stamens about 8. Fertile flowers 2, in a 4-lobed involucre, which in fruit is echinate with soft simple spines.
6. CASTANEA. Sterile flowers glomerate, in very long cylindrical bracteate aments. Calyx 5 – 6-parted. Stamens 5 – 20. Fertile flowers about 3, in a 4-valved involucre, which in fruit is covered with branching rigid prickles.

1. OSTRYA. *Michel.; Endl. gen.* 1842. *HOP HORNBEAM.*

[So named from the Greek, *ostreon*, a scale or shell; in allusion to the fruit.]

STERILE FL. Ament cylindrical, without bracts. Calyx consisting of a fringed scale. Stamens 8 – 10 or more: filaments branched: anthers 1-celled. FERTILE FL. in a loose bracteate ament; the bracts small and deciduous. Each flower enclosed in a membranaceous sac-like involucre. Ovary 2-celled, crowned with the small entire fringed limb of the calyx: style short: stigmas 2, filiform. Nut oblong, included in the bladdery involucre. — Small trees, with ovate or oblong leaves, and the fruit in pendulous hop-like strobiles.

1. OSTRYA VIRGINICA, *Willd.* (Plate CII.) *Hop Hornbeam. Iron-wood.*

Leaves oblong-ovate, acuminate; buds acute; strobiles oblong-ovoid. — *Willd. sp.* 4. *p.* 469; *Pursh, fl.* 2. *p.* 623; *Ell. sk.* 2. *p.* 618; *Bigel. fl. Bost. p.* 358; *Beck, bot. p.* 327; *Darlingt. fl. Cest. p.* 511. Carpinus Ostrya-Americana, *Michx. fl.* 2. *p.* 202. C. Ostrya, *Michx. f. sylv.* 2. *t.* 109.

A tree 20 – 30 feet high and 4 – 8 inches in diameter, with a brownish bark, which is slightly furrowed with narrow divisions. Leaves about three inches long, somewhat cordate, sharply and unequally serrate, smoothish above, pubescent on the veins underneath: petioles hairy, 3 – 4 lines long. Flowers in terminal aments, appearing before the leaves; the barren ones 1 – 2 inches long, with the scales entire and conspicuously fringed: anthers bearded at the tip. Fertile aments solitary; the flowers in pairs, with a caducous cordate or lanceolate bract at the base of each pair. Involucres utriculate, oblong-lanceolate, hoary-pubescent, the base clothed with rigid hairs, bladder-like in fruit; the numerous involucres forming an ovoid or oblong strobile, which is usually pendulous, but sometimes extended, never erect. Nut about one-fourth of an inch long, acute, ribbed at the summit and on each edge.

Woods, commonly in shady fertile soils on the banks of rivers. *Fl.* April – May. *Fr.* August – September. The wood of this tree is white, very compact, and of great strength. It is often used for levers, and is hence called *Lever-wood* in some places. Owing to its small size, and its not occurring in large quantities, the tree is not very important. The older botanists confounded this species with the European *O. vulgaris*, which indeed it much resembles.

2. CARPINUS. *Linn.; Endl. gen.* 1843. *HORNBEAM.*

[From the Celtic words *car*, wood, and *pin*, the head; because the wood is fit for the yokes of cattle.]

STERILE FL. Aments cylindrical; the calyx-scales ovate, acute, without bracts. Stamens about 12: filaments simple: anthers ovate. FERTILE FL. Aments loose, terminal. Bracts ovate, hairy, deciduous. Involucral scales in pairs; each pair 2-flowered, unequally 3-lobed, at length large and foliaceous. Limb of the calyx small, 6-toothed. Style very short: stigmas 2, filiform. Nut bony, ovoid, acute, ribbed. — Trees, with ovate serrate stipulate leaves.

1. CARPINUS AMERICANA, *Michx.* (Plate CIII.) *Hornbeam. Water Beech.*

Leaves oblong-ovate; scales of the pistillate ament 3-lobed, the middle lobe much the largest, unequally serrate-toothed on one side.—*Michx. fl.* 2. *p.* 210; *Willd. sp.* 4. *p.* 468; *Michx. f. sylv.* 2. *t.* 108; *Pursh, fl.* 2. *p.* 623; *Nutt. gen.* 2. *p.* 218; *Bigel. fl. Bost. p.* 357; *Ell. sk.* 2. *p.* 618; *Beck, bot. p.* 326; *Darlingt. fl. Cest. p.* 541.

A tree from 15 to 20 feet high, and the trunk seldom more than 6 inches in diameter; the bark smooth and light gray. Leaves about three inches long, acuminate, often cordate at the

base, sharply and somewhat doubly serrate, a little hairy on the veins and in the axils underneath. Sterile aments pendulous from the sides of the small twigs, near their extremity. Anthers ovoid, hairy at the summit. Fertile aments about two inches long. Bracts small, ovate, acuminate. Involucral scales on short stalks, loosely imbricated, finally almost an inch long; in pairs, the scales of which are applied base to base. Nut one-fourth of an inch long, broad at the base, compressed, dark brown, marked with about four narrow ribs on each side.

Woods, particularly along rivulets. *Fl.* April. *Fr.* October. The wood of this tree is whitish, very compact and fine-grained; but it is seldom employed in the arts, on account of its small size. The nearly allied *C. Betulus* of Europe grows somewhat larger.

3. CORYLUS. *Tourn.; Endl gen.* 1844. *HAZEL-NUT.*

[From the Greek word *korys*, a helmet or cap; in allusion to the form of the involucre.]

STERILE FL. in slender cylindrical aments. Bracts and calyx combined into 3-cleft scales; the middle lobe covering the two lateral ones. Stamens 8: filaments short: anthers ovoid, 1-celled. FERTILE FL. in terminal capitate clusters, bracteate. Involucres 1 – 2-flowered, formed of 2 – 3 scales which are united below, and at length become large and enclose the fruit. Ovary 2-celled: stigmas 2, filiform. Nut roundish-ovoid, bony, enclosed in the large leafy-coriaceous lacerated involucre. — Shrubs, with roundish-cordate or obovate leaves, which appear after the flowers have unfolded.

1. CORYLUS AMERICANA, *Walt.* *American Hazel-nut. Wild Filbert.*

Leaves roundish-cordate, acuminate; involucres globose-campanulate; the limb dilated, foliaceous, coarsely toothed and lacerated. — *Walt. fl. Car. p.* 236; *Michx. fl.* 2. *p.* 201; *Pursh, fl.* 2. *p.* 634; *Bigel. fl. Bost. p.* 356; *Ell. sk.* 2. *p.* 611; *Torr. compend. p.* 354 (bis); *Beck, bot. p.* 332; *Darlingt. fl. Cest. p.* 539. C. Americana humilis, *Wang. Amer. p.* 88. *t.* 29. *f.* 63.

A shrub 4 – 6 feet high, with slender branches and numerous suckers; the young twigs pubescent and glandular. Leaves 3 – 5 inches long, coarsely and unequally serrate, pubescent, on short petioles: stipules ovate-lanceolate, deciduous. Sterile aments long and pendulous, slender; the scales imbricated, ciliate; the middle lobe acuminate. Fertile flowers in pedunculate clusters; the scales at first lanceolate, finally coalescing, and forming a campanulate glandularly pubescent involucre which extends beyond the nut; the border unequally cut and toothed. Nut from half an inch to three-fourths of an inch long, and often of greater breadth than length, a little compressed; the kernel of excellent flavor.

Borders of woods, thickets, etc.; growing usually in bunches; common in most parts of the State. *Fl.* April. *Fr.* September. The nuts greatly resemble those of the common European Hazel-nut, but they are smaller, and the shell thicker. They are frequently seen in our markets and fruit-stores.

2. CORYLUS ROSTRATA, *Ait.* *Beaked Hazel-nut.*

Leaves ovate-oblong, acuminate, doubly serrate; involucre prolonged above the fruit into a narrow tubular beak, which is laciniately toothed at the summit. — *Ait. Kew.* (ed. 2) 2. *p.* 364; "*Willd. arb. p.* 80. *t.* 1. *f.* 2;" *Michx. fl.* 2. *p* 201; *Pursh, fl.* 2. *p.* 635; *Nutt. gen.* 2. *p.* 216; *Bigel. fl. Bost. p.* 357; *Ell. sk.* 2. *p.* 612; *Torr. compend. p.* 354 (bis); *Beck, bot. p.* 332; *Hook. fl. Bor-Am.* 2. *p.* 160; *Loud. enc. tr. & shr. p.* 925.

A shrub 2 – 5 feet high, with slender smooth branches. Leaves about three inches long, somewhat cordate at the base, pubescent (especially on the veins) underneath, smoothish above: petioles hairy, 3 – 5 lines long. Involucre of the fruit nearly two inches long; the lower part closely enveloping the nut, and densely clothed with stiff hairs; the upper part tubular and smoothish, cut at the extremity into several unequal acute teeth.

Mountain woods and banks of rivers; frequent north and west of the Highlands. *Fl.* April. *Fr.* September. Easily distinguished from the preceding by its narrow leaves and the long beak of the involucre.

4. QUERCUS. *Linn.; Endl. gen.* 1845. *OAK.*

[Said to be derived from the Celtic words *quer*, beautiful, and *cuez*, a tree]

STERILE FL. in long slender pendulous aments, without bracts. Calyx 6 – 8-parted; the segments unequal, mostly entire. Stamens 6 – 10: filaments slender: anthers 2-celled. FERTILE FL. Several together on erect axillary peduncles, or sessile on a rachis. Involucre 1-flowered, consisting of numerous closely imbricated scales, in fruit becoming an indurated cup surrounding the base of the nut. Ovary 3-celled, with two suspended collateral ovules in each cell, becoming in fruit an ovoid or roundish 1-seeded nut. — Trees or shrubs, with stipulate often lobed or serrated leaves. Flowers inconspicuous, greenish white; the sterile aments usually several together. Pubescence stellate.

* *Fruit biennial, sessile.*

† *Leaves entire.*

1. QUERCUS PHELLOS, *Linn.* (Plate CIV.) *Willow Oak. Peach-leaved Oak.*

Leaves deciduous, narrowly lanceolate, acute at each end, very entire; cup saucer-shaped; nut somewhat globose. — *Linn. sp.* 2. *p.* 994; *Abbot, ins. Georg.* 2. *t* 91; *Michx. Querc. t.* 12, *and fl.* 2. *p.* 97; *Michx. f. sylv.* 1. *t.* 14; *Pursh, fl.* 2. *p.* 625; *Torr. compend. p.* 357; *Beck, bot. p.* 328.

A tree 30 – 50 feet high and 12 – 18 inches in diameter, with a smoothish bark. Leaves 3 – 4 inches long and 6 – 8 lines broad, light green, smooth, often a little undulate on the margin, sometimes toothed in the young state. Acorns nearly sessile; the cup shallow; the scales closely appressed: nut dark brown when ripe, nearly spherical or somewhat depressed: kernel bitter.

Sandy rather moist woods: Suffolk county, Long Island. *Fl.* April. *Fr.* October. The wood of this Oak is reddish and coarse-grained. It is not much esteemed.

†† *Leaves toothed or lobed.*

2. QUERCUS NIGRA, *Linn.* (Plate CV.) *Black Jack Oak.*

Leaves coriaceous, obtusely cuneate, dilated and retusely 3-lobed above, the lobes mucronate when young, rusty-pulverulent underneath ; nut roundish-ovoid, nearly half immersed in the turbinate cup. — *Linn. sp.* 2. *p.* 995 ; *Michx. Querc. t.* 22 – 23, *and fl.* 2. *p.* 198 ; *Pursh, fl.* 2. *p.* 629 ; *Ell. sk.* 2. *p.* 60 ; *Torr. compend. p.* 357 ; *Beck, bot. p.* 328. Q. ferruginea, *Michx. sylv.* 1. *t.* 20.

A tree 10 – 25 feet high, with a trunk 4 – 8 inches in diameter, with spreading crooked branches and a rough blackish bark. Leaves 3 – 4 inches long (on young sprouts much larger), smooth, shining and dark green above, sprinkled with very minute rusty-colored scales underneath ; the lower part cuneate, but usually obtuse or even slightly cordate at the base ; the summit dilated and obtusely 3- or sometimes 5-lobed : lobes in the young leaves tipped with a short bristle. Acorn of middle size : scales of the cup closely appressed : nut rather dark brown.

Sandy soils, Hempstead Plains, Long Island. *Fl.* April – May. *Fr.* October. The wood of this tree is compact ; but in consequence of its small size, it is of little value as timber. When of sufficient size, it is much esteemed for fuel. In the city of New-York, it often occurs among the oak wood brought from New-Jersey, in the pine region of which it is abundant.

3. QUERCUS TINCTORIA, *Bartram.* *Black Oak. Quercitron.*

Leaves moderately lobed, somewhat rusty-pubescent underneath (particularly in the axils), obtusely sinuate, mucronate ; nuts ovoid-globose, nearly one-third immersed in the thick turbinate cup. — *Bartr. trav. p.* 37 ; *Michx. Querc. t.* 24 – 25, *and fl.* 2. *p.* 198 ; *Pursh, fl.* 2. *p.* 629 ; *Bigel. fl. Bost. p.* 350 ; *Ell. sk.* 2. *p.* 601 ; *Michx. f. sylv.* 1. *t.* 24?;* *Torr. compend. p.* 357 ; *Beck, bot. p.* 328 ; *Darlingt. fl. Cest. p.* 531. Q. discolor, *Willd. sp.* 4. *p.* 444 ?

Trunk 50 – 80 feet high and 2 – 4 feet in diameter, with rough blackish bark. Leaves 5 – 8 inches long and 3 – 5 inches wide, obovate, more or less deeply lobed, but usually not half way to the midrib, with the lobes somewhat toothed and setaceously mucronate when young, clothed with rusty pubescence underneath, which, however, mostly disappears by midsummer, except in the axils of the veins : petioles 1 – 2 inches long. Acorns on very short peduncles. Cup abruptly contracted at the base ; the scales distinct, but pretty closely pressed. Nut rather small, brownish, often nearly globose, somewhat depressed at the summit. Kernel yellowish.

Woods ; common. *Fl.* May. *Fr.* October. I have not found the leaves of this oak so

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* The acorns of this plate belong to the Scarlet Oak, and those of plate 25 to the Black Oak. (See *N. Amer. Sylv. pp.* 94 & 97.)

deeply lobed as they are represented in the North American Sylva. The figure in that work is thought by Elliott and some other botanists to belong to a distinct species. The bark of the *Black Oak* yields the valuable yellow dye called *quercitron*, and is also much used in tanning. The wood is reddish, coarse-grained, and possesses considerable strength, but is much inferior to the *White Oak*. It constitutes a good part of our oak firewood.

4. QUERCUS COCCINEA, *Waugh.* *Scarlet Oak.*

Leaves on long petioles, deeply sinuate-lobed, smooth on both sides; the lobes divaricate, toothed, setaceously mucronate; nut roundish-ovoid, about one-third immersed in the turbinate cup. — *Wang. Amer. t.* 4. *f.* 5; *Michx. Querc. t.* 31 – 32, *and fl.* 2. *p.* 199; *Pursh, fl.* 2. *p.* 630; *Bigel. fl. Bost. p.* 351; *Ell. sk.* 2. *p.* 602; *Michx. f. sylv.* 1. *t.* 25 (fruit, *pl.* 24); *Torr. compend. p.* 358; *Beck, bot. p.* 329; *Darlingt. fl. Cest. p.* 532.

A tree 50 – 80 feet high and 2 – 3 feet or more in diameter. Leaves 4 – 8 inches long, oblong in the outline, smooth and shining on both sides, bright green, with 3 or 4 lobes on each side; the sinuses extending two-thirds of the way to the midrib, broad or truncate at the base: petioles $1\frac{1}{2}$ – 3 inches long. Acorns nearly sessile; the cup very thick, with conspicuous triangular-ovate scales: nut middle-sized, sometimes nearly one-half immersed in the cup. Kernel white.

Moist rich woods; common. *Fl.* May. *Fr.* October. The bark of this oak is valuable for tanning. The wood is much used by coopers, but is not durable when exposed to the weather.

5. QUERCUS RUBRA, *Linn.* (Plate CVI.) *Red Oak.*

Leaves on long petioles, deeply sinuate-lobed, the sinuses rather acute, smooth on both sides; the lobes spreading, somewhat toothed and setaceously mucronate; cup saucer-shaped, nearly smooth; nut oblong-ovoid. — *Linn. sp.* 2. *p.* 996; *Michx. Querc. t.* 35 – 36, *and fl.* 2. *p.* 200; *Pursh, fl* 2. *p.* 630; *Bigel. fl. Bost. p.* 351; *Ell. sk.* 2. *p.* 602; *Michx. f. sylv.* 1. *t.* 28; *Torr. compend. p.* 358; *Beck, bot. p.* 329; *Darlingt. fl. Cest. p.* 532; *Hook. fl. Bor.-Am.* 2. *p.* 158.

A tree 50 – 80 feet high and 2 – 4 feet in diameter. Leaves 6 – 9 inches long and 3 – 5 inches wide, the outline oblong; the lobes extending about half way to the midrib, with narrow sinuses, smooth on both sides, except a little pubescence in the axils underneath: petioles 1 – 2 inches long. Acorns closely sessile; the cup flat and very shallow; the scales small and very closely imbricated: nut often an inch or more in length, rounded at the summit.

Rocky woods, particularly below the Highlands; common near New-York. *Fl.* May. *Fr.* October. The bark is good for tanning; but the wood is not durable, though it is much used as cooper's stuff.

6. QUERCUS PALUSTRIS, *Du Roi.* (Pl. CVII.) *Pin Oak. Water Spanish Oak.*

Leaves on long petioles, deeply sinuate-lobed with broad obtuse sinuses, smooth on both sides; the lobes toothed, setaceously mucronate; cup saucer-shaped; nut nearly globose (small).—"*Du Roi, harbk.* 2. *t.* 5. *f.* 4;" *Michx. Querc. t.* 33 – 34, *and fl.* 2. *p.* 200; *Pursh, fl.* 2. *p.* 631; *Michx. sylv.* 1. *t.* 27; *Torr. compend. p.* 358; *Beck, bot. p.* 329; *Darlingt. fl. Cest. p.* 532.

A tree 40 – 80 feet high and 2 – 3 feet in diameter, with numerous spreading slender branches and smoothish bark. Leaves 3 – 5 inches long, and broader in proportion than in any of the preceding species, bright green and shining; the sinuses extending three-fourths of the way to the midrib, and very broad: petioles 1 – 2 inches long. Acorns numerous, on short peduncles; the cup shallow and smoothish, slightly turbinate: nut less than half an inch long, mostly globose, light brown.

Low woods, particularly on the borders of streams; common in the southern part of the State. *Fl.* May. *Fr.* October. The wood is strong, and held in estimation by wheelwrights, but it is not considered durable. It is sometimes called *Swamp Spanish Oak.*

7. QUERCUS ILICIFOLIA, *Wang.* *Bear Oak. Barren Scrub Oak.*

Leaves on rather short petioles, cuneate-obovate, angularly about 5-lobed, grayish-tomentose underneath; lobes entire, mucronate; cup somewhat turbinate; nut roundish-ovoid.—*Wang. Amer. p.* 79. *t.* 6. *f.* 17; *Ait. Kew.* (ed. 2.) 5. *p.* 292; *Bigel. fl. Bost. p.* 352; *Ell. sk.* 2. *p.* 605. Q. Banisteri, *Michx. Querc. t.* 27, *and fl.* 2. *p.* 199; *Michx. f sylv.* 1. *t.* 21; *Pursh, fl.* 2. *p.* 631; *Beck, bot. p.* 330; *Darlingt. fl Cest. p.* 533.

A straggling much branched shrub, 3 – 8 feet high, usually growing in dense masses. Leaves 2 – 4 inches long, obtusely cuneate at the base and tapering into a petiole about half an inch in length, mostly 5-lobed; the lobes short and angular. Acorns numerous: scales of the cup obtuse, minutely pubescent, closely imbricated: nut half an inch long, roundish or somewhat ovoid, dark brown and striate with pale lines.

Sterile sandy soils, and on rocky hills. Abundant on Long Island; summit of the Fishkill mountains, and other parts of the Highlands; sandy plains near Schenectady, Rome, &c. *Fl.* May. *Fr.* September. A worthless species. In some places it is called *Black Scrub Oak.*

** *Fructification annual: fruit mostly pedunculate.*

† *Leaves sinuate-lobed; the lobes not mucronate.*

8. QUERCUS OBTUSILOBA, *Michx.* *Post Oak. Box White Oak.*

Leaves deeply sinuate-lobed, cuneate at the base, grayish-pubescent underneath; lobes obtuse, the upper ones dilated and retuse; cup hemispherical; nut ovoid. — *Michx. Querc. t.* 1, *and fl.* 2. *p.* 194; *Pursh, fl.* 2. *p.* 631; *Ell. sk.* 2. *p.* 606; *Michx. sylv.* 1. *t.* 5; *Torr. compend. p.* 359; *Beck, bot. p.* 330; *Darlingt. fl. Cest. p.* 533. Q. stellata, *Willd. sp.* 4. *p.* 452; *Muhl. cat. p.* 87.

A tree 20 – 40 feet high and 8 – 15 inches in diameter (in the Southern States much larger), with large irregular branches and a light gray bark. Leaves 4 – 6 inches long, rather thick and coriaceous, of a dull green above, and grayish or somewhat rusty colored underneath; the upper lobes broad and notched or obtuse: petioles tawny, 5 – 8 lines long. Acorns usually numerous, nearly sessile, or 2 – 3 together on a peduncle: cup grayish, rather thin; the scales very small: nut half an inch long, more than one-third immersed in the cup.

Sandy soils: Hempstead Plains, &c., Long Island. *Fl.* May. *Fr.* September. The wood of this species is pretty close-grained, of a yellowish color, and very durable. It is used for posts, and is employed also by coopers and wheelwrights. In shipbuilding, it is used for the *knees* of the frame. As a fuel, it is highly esteemed.

9. QUERCUS MACROCARPA, *Michx.* (Plate CVIII.) *Over-cup White Oak.*

Leaves deeply and somewhat lyrately sinuate-lobed, pubescent underneath, the lobes obtuse, repand; acorn very large; cup hemispherical, fringed above; nut ovoid, more than half immersed in the cup.—*Michx. Querc. t.* 2 – 3, *and fl.* 2. *p.* 194; *Pursh, fl.* 2. *p.* 632; *Michx. sylv.* 1. *t.* 4; *Torr. compend. p.* 359; *Beck, bot. p.* 330.

Trunk 40 – 60 feet high: bark of the branches somewhat corky, in ridges. Leaves 6 – 12 inches or more in length, obovate in the outline: lobes obtuse and spreading; the upper ones larger and dilated. Acorns pedunculate, often larger than a pigeon's egg; the cup conspicuously imbricated, and commonly fringed with soft filaments round the margin: nut one-half or two-thirds immersed in the cup, rounded at the summit.

Woods near Schenectady (*Mr. Tuckerman*); also on the islands of Lake Champlain (*Oakes and Robbins*), and probably on the New-York shores of the lake. Michaux states that the wood is inferior to that of the White Oak; but according to Pursh, it is excellent.

10. QUERCUS OLIVÆFORMIS, *Michx.* *Mossy-cup Oak.*

Leaves oblong, smooth, glaucous underneath, deeply and unequally sinuate-lobed; cup very deep, ciliate on the margin; nut elliptical-oval, three-fourths enclosed in the cup. — *Michx. f. sylv.* 1. *p.* 32. *t.* 3; *Pursh, fl.* 2. *p.* 631; *Torr. compend. p.* 359; *Beck, bot. p.* 330.

A tree 60 – 70 feet high, with a spacious summit; the smaller branches slender and recurved: bark white and laminated. Acorns about an inch and a quarter long; the length about twice as great as the breadth: scales loose; the upper ones terminating in flexible filaments: nut somewhat pointed at each end (*Michx. f.*).

Banks of the Hudson above Albany, and in the western part of the State (*Michaux*). A very rare species, which I have never been able to detect in the State. Little is known respecting the properties of the wood, but Michaux thinks it as good as that of the White Oak.

11. QUERCUS ALBA, *Linn.* *White Oak.*

Leaves obovate-oblong, somewhat equally pinnatifid-sinuate, the segments oblong, obtuse, mostly entire; cup hemispherical, thin, tuberculate-scabrous; nut ovoid or oblong. — *Linn. sp.* 2. *p.* 996; *Michx. Querc. t.* 5, *and fl.* 2. *p.* 195; *Pursh, fl.* 2. *p.* 633; *Bigel. fl. Bost. p.* 349; *Michx. sylv.* 1. *p.* 1; *Ell. sk.* 2. *p.* 607; *Beck, bot. p.* 329; *Darlingt. fl. Cest. p.* 534.

Trunk 50 – 80 feet or more in height, and 2 – 4 feet in diameter; the bark of a light gray color. Leaves 4 – 6 inches long, pinnately and obliquely cut on each side into 3 – 5 more or less deep lobes, smooth and bright green above, pale and somewhat glaucous underneath. Acorns mostly in pairs, on a peduncle about three-fourths of an inch long; the cup rough with little tubercles: nut often an inch long: nucleus sweet, with but little bitterness.

Woods, preferring rather fertile damp soils. *Fl.* May. *Fr.* October. This is one of the most valuable timber trees in the world; the wood being compact, elastic, strong and durable. These properties cause it to be in great demand for a great variety of purposes, so that it is rapidly disappearing from our forests. Most of the leaves remain on the tree after they wither in the autumn, sometimes until the following spring.

†† *Leaves coarsely serrate or toothed, not lobed.*

12. QUERCUS BICOLOR, *Willd.* *Swamp White Oak.*

Leaves oblong-obovate, whitish tomentose underneath, cuneate and entire at the base, coarsely and obtusely (8 – 15-) toothed; fruit on a long peduncle; cup hemispherical; nut oblong-ovoid. — *Willd. sp.* 4. *p.* 440; *Pursh, fl.* 2. *p.* 632; *Bigel. fl. Bost. p.* 350; *Nutt. gen.* 2. *p.* 215; *Beck, bot. p.* 331; *Darlingt. fl. Cest. p.* 534. Q. Prinus tomentosa, *Michx. Querc. t.* 9 *f.* 9. Q. Prinus discolor, *Michx. f. sylv.* 1. *t.* 7.

Trunk 30 – 60 feet high, and 1 – 2 feet or more in diameter; the bark grayish white and scaly. Leaves 5 – 8 inches long, often dilated above, unequally toothed, the teeth dilated at the base: upper surface smooth and bright green; the under softly pubescent, and sometimes slightly ferruginous: petiole 6 – 8 lines long. Peduncles 1 – 2 inches long, usually bearing two large acorns: cup rather thin, pubescent inside; the margin somewhat toothed with the pointed inner scales.

Wet woods and margins of swamps; not rare. *Fl.* May. *Fr.* October. Mr. Nuttall considers the *Q. Prinus discolor* of Michaux's Sylva as a distinct species from Willdenow's *Q. bicolor*, and has named it *Q. Michauxii*; but it seems to be scarcely more than a variety. Michaux thinks the timber is superior to that of the White Oak.

13. QUERCUS MONTANA, *Willd.* *Rock Chestnut Oak.*

Leaves broadly obovate, pubescent and somewhat glaucous underneath, coarsely and almost equally toothed; teeth broad and obtuse, slightly mucronate; acorn on short peduncles; cup

hemispherical-turbinate; nut elliptical-oblong.—*Willd. sp.* 4. *p.* 440; *Pursh, fl.* 2. *p.* 634; *Torr. compend. p.* 354 (bis); *Beck, bot. p.* 331; *Darlingt. fl. Cest. p.* 535. Q. Prinus monticola, *Michx. Querc. t.* 7, *and fl.* 2. *p.* 196; *Michx. fl. sylv.* 1. *t.* 9.

A tree 40 – 60 feet high, and 1 – 2 feet or more in diameter (sometimes 3 feet according to Michaux); the bark furrowed. Leaves 4 – 7 inches long and 2 – 3½ inches wide, acute, either cuneate or obtuse at the base, smooth above, paler and pubescent underneath; the teeth more numerous than in the preceding species: petioles 6 – 10 lines long. Peduncles 3 – 6 lines long, usually bearing two acorns: cup embracing about one-third of the nut; the scales appressed, very minute: nut an inch or more in length, somewhat pointed; the kernel sweet and rather pleasant.

Rocky banks of the Hudson, particularly in the Highlands; also on Lake Champlain, and in the southwestern counties. *Fl.* May. *Fr.* Middle of September. The wood of this species much resembles that of the White Oak, but is heavier. It is also excellent fuel, being not much inferior to hickory. The bark of the branches and smaller trunks is highly valued by tanners.

14. QUERCUS CASTANEA, *Willd.* *Yellow Oak. Chestnut Oak.*

Leaves oblong-lanceolate, on long petioles, pubescent and grayish underneath, equally and rather acutely toothed, the teeth callous at the tip; acorns nearly sessile: cup hemispherical: nut roundish-ovoid.—*Willd. sp.* 4. *p.* 441; *Pursh, fl.* 2. *p.* 634; *Ell. sk.* 2. *p.* 610; *Beck, bot. p.* 331; *Darlingt. fl. Cest. p.* 535. Q. Prinus acuminata, *Michx. Querc. t.* 7, *& fl.* 2. *p.* 196; *Michx. f. sylv.* 1. *t.* 10.

A tree 40 – 60 feet high and 1 – 2 feet in diameter. Leaves 3 – 5 inches long and 1 – 2 inches wide, varying from oblong-lanceolate to elliptical-lanceolate, with 8 – 10 coarse teeth on each side, smooth and yellowish green above, finely pubescent and light colored underneath. Acorns middle sized, usually almost sessile: cup embracing about one-third of the nut; the scales minute, appressed, obtuse: nut light brown.

Chemung county (*Dr. Knieskern*). My specimens are young, but I have little doubt of their belonging to this species. The wood is yellowish, but little is known respecting its mechanical qualities and durability.

15. QUERCUS PRINOIDES, *Willd.* (Plate CIX.) *Chinquapin Oak.*

Leaves obovate and lanceolate-oblong, on short petioles, sinuately and sometimes indistinctly toothed, pubescent underneath, the teeth somewhat equal, callous at the tip; acorns sessile, the cup hemispherical; nut ovoid.—*Willd. sp.* 4. *p.* 440; *Pers. syn.* 2. *p.* 568; *Muhl. cat. p.* 91. Q. Prinus pumila, *Michx. fl.* 2. *p.* 196. Q. Prinus Chincapin, *Michx. f. sylv.* 1. *t.* 11. Q. Chinquapin, *Pursh, fl.* 2. *p.* 634; *Ell. sk.* 2. *p.* 611; *Beck, bot. p.* 331; *Darlingt. fl. Cest. p.* 536.

A shrub 3 – 6 feet high, with numerous slender branches. Leaves 3 – 4 inches long and 1½ – 2½ inches wide, the teeth obtuse or somewhat acute, smooth and light green above, whitish or with a glaucous tinge underneath: petioles 3 – 5 lines long. Acorns numerous, large for the size of the plant; the cup thin, closely imbricated with minute obtuse scales: nut rather obtuse; the kernel sweetish, white.

Sandy woods: Long Island, and between Albany and Schenectady. *Fl.* May. *Fr.* End of September. This species, which is often called *Dwarf Chestnut Oak*, grows in large patches, but is too small to be applied to any use. The acorns are devoured by squirrels and other animals, so that it is rare to find them lying on the ground.

5. FAGUS. *Tourn.; Endl. gen.* 1847. BEECH.

[From the Greek word *phago*, to eat; because the nuts were formerly used as food.]

STERILE FL. capitate, on a long drooping peduncle, with small deciduous bracts. Calyx campanulate, 5 – 6-cleft. Stamens 8 – 12, exserted. FERTILE FL. two or more together in an urceolate somewhat 4-lobed involucre, which consists of numerous subulate scales grown together at their bases. Limb of the calyx produced above the ovary, and 4 – 5-cleft. Ovary triquetrous, 3-celled: styles 3, filiform. Involucre finally coriaceous, muricated with subulate points, and deeply 4-parted. Nuts triquetrous, 1 – 2 in each involucre. — Trees with a smooth grayish bark, and stipular feather-veined toothed leaves.

1. FAGUS FERRUGINEA, *Ait.* (Plate CX.) *Beech.*

Leaves elliptical-ovate, acuminate, conspicuously toothed, ciliate on the margin; nut acute. —*Ait. Kew.* (ed. 1.) 3. *p.* 362; *Pursh, fl.* 2. *p.* 624; *Beck, bot. p.* 333; *Darlingt. fl. Cest. p.* 538. F. sylvatica, *var.* Americana, *Nutt. gen.* 2. *p.* 216?; *Ell. sk.* 2. *p.* 613; *Bigel. fl. Bost. p.* 348. F. sylvestris, *Michx. fl.* 2. *p.* 194; *Michx. fl. sylv. t.* 107.

A beautiful tree, often 50 – 60 feet high and 2 feet or more in diameter; the trunk clothed with a thick smooth gray bark. Leaves 3 – 5 inches long and 1½ – 2½ inches wide, strongly and remotely toothed, bright green and shining above, silky underneath when young, but finally almost smooth: petioles pubescent, 3 – 5 lines long. Sterile heads roundish or ovoid, consisting of 20 – 30 flowers: peduncle filiform, about two inches long, slightly silky-pubescent. Calyx tubular-campanulate, light brown, villous, mostly 5-cleft; the segments oblong. Stamens 10 – 12: anthers oblong. Fertile flowers 2 – 3 on a stout peduncle, which is 5 – 6 lines long. Ovary acutely triangular: styles elongated, stigmatose on the inside. Nuts nearly three-fourths of an inch long when mature, sharply 3-angled, with the sides a little concave, mostly acute but sometimes rather obtuse, with a small abrupt acumination. Involucre finally coriaceous and splitting nearly to the base into four lobes or valves, clothed with soft prickles which are mostly spreading or recurved.

Fertile woods; common in most parts of the State, but forming the greater parts of extensive

forests in the western counties. *Fl.* May. *Fr.* October. I have seen but one species of Beech in the State. There are two varieties distinguished by mechanics who use the wood, one called Red, the other White Beech; the difference being probably caused by the greater or less humidity of the soil. *F. ferruginea* of Michaux's Sylva (not of *Ait.*), if a distinct species, has not come under my observation. The European Beech (*F. sylvatica*) differs from ours in its much smaller broadly ovate leaves, which are also far less deeply toothed; the prickles of the fruit are more numerous, and straight; the peduncle of the sterile head of flowers shorter and more hairy.

6. CASTANEA. *Tourn.; Endl. gen.* 1848. CHESTNUT.

[Named from *Castanea*, in Thessaly, celebrated for its Chestnut trees.]

Flowers monœcious, or rarely perfect. STERILE FL. very-numerous, interruptedly clustered in long cylindrical aments. Calyx deeply 5 – 6-parted. Stamens 8 – 15. FERTILE or PERFECT FL. 2 – 3, in an ovoid or campanulate scaly or muricate involucre. Stamens 5 – 12, minute and mostly abortive. Ovary crowned with the 5 – 6-cleft limb of the calyx, 3 – 6-celled, with a single ovule in each cell, in fruit becoming a 1-seeded coriaceous nut. Involucre of the fruit coriaceous, echinate, 4-lobed, containing 1 – 3 nuts.—Trees or shrubs, with serrate or entire feather-veined leaves; the sterile aments clustered and very long.

1. CASTANEA VESCA, *var.* AMERICANA, *Michx.* (Plate CXI.) *Chestnut.*

Leaves oblong-lanceolate, acuminate, mucronately serrate, smooth on both sides.—*Michx. fl.* 2. *p.* 193; *Pursh, fl.* 2. *p.* 624; *Ell. sk.* 2. *p.* 614; *Nutt. gen.* 2. *p.* 217; *Torr. compend. p.* 355; *Darlingt. fl. Cest. p.* 536. C. vesca, *Michx. f. sylv.* 2. *t.* 104; *Bigel. fl. Bost. p.* 349; *Beck, bot. p.* 332.

A tall tree, sometimes 60 – 80 feet high and 3 – 4 feet in diameter. Leaves 6 – 8 inches long and about two inches wide, bright green, pubescent when young, but quite smooth when old. Sterile aments 4 – 8 inches long; the numerous flowers white or cream color, emitting an unpleasant odor. Calyx 6-parted. Stamens mostly 12, longer than the calyx. Fertile involucres solitary or several in a cluster, scaly, at length very large, globose, and covered with slender compound rigid prickles, enclosing three nuts, one or two of which are often abortive. Limb of the calyx produced above the ovary into a slender tube, which is 6 – 8-parted at the summit. Nuts varying in form according to the number in an involucre: when there are two, each will be compressed on the inside; and when three are perfected, the middle one will be flattened on each side.

Woods; common south of Lake Champlain, but scarce in the northern and western parts of the State. *Fl.* June. *Fr.* October. The American Chestnut differs from the European chiefly in the much smaller nuts. The wood is coarse-grained, light and very durable, and is much valued for fencing. It makes very poor fuel, on account of its violent snapping while it burns.

2. CASTANEA PUMILA, *Michx.* *Chinquapin.*

Leaves oblong, acute, mucronately serrate, hoary-pubescent underneath. — *Michx. fl.* 2. *p.* 193; *Michx. sylv.* 2. *t.* 105; *Pursh, fl.* 2. *p.* 624; *Ell. sk.* 2. *p.* 615; *Beck, bot p.* 332; *Darlingt. fl. Cest. p.* 537; *Loud. enc. trees & shrubs, p.* 914. Fagus pumila, *Linn. sp.* 2. *p.* 998; *Wang. Amer. p.* 57. *t.* 19. *f.* 44. F. pumila, *var.* serotina, *Walt. fl. Car. p.* 233. F. Castanea pumila, *Marsh. arbust. p.* 47.

A shrub 6 – 12 feet high (in the Southern States sometimes 30 – 40 feet high and a foot or more in diameter). Leaves 3 – 4 inches long and about an inch and a half wide, sharply serrate, similar to those of the preceding species, only much smaller, and white on the under surface. Sterile aments 2 – 3 inches long. Involucre of the fruit about an inch and a half in diameter, covered with short prickles, opening at the summit by four valves. Nut solitary, ovoid, convex on both sides, about half as large as the common chestnut.

Sandy woods, Long Island (*Mr. W. R. Prince*).

ORDER C. MYRICACEÆ. *L. C. Rich.* THE GALE TRIBE.

Flowers in aments, monœcious or diœcious, destitute of both calyx and corolla. STERILE FL. consisting of 2 – 6 free or monadelphous stamens in the axil of a bract, forming a slender ament. FERTILE FL. in an oval or cylindrical head, each consisting of an ovary of one cell and a single ovule, surrounded at the base with scales: stigmas 2, filiform. Fruit drupaceous or dry, indehiscent. Albumen none. — Shrubs, with alternate simple leaves, which are dotted with resinous glands.

1. MYRICA. *Linn.; Nutt. gen.* 2. *p.* 235. *CANDLEBERRY MYRTLE.*

[From the Greek word *myro*, to flow; the species first known being found on the banks of rivers.]

Flowers diœcious. STERILE FL. in cylindrical aments. Stamens mostly 4. FERTILE FL. in small ovoid aments, closely imbricated. Bracts small Involucral scales 3, at the base of each ovary. Styles filiform. — Leaves deciduous or evergreen, more or less serrate.

1. MYRICA GALE, *Linn.* *Sweet Gale. Dutch Myrtle.*

Leaves cuneate-lanceolate, slightly serrate towards the point; sterile aments closely imbricated, the bracts fringed; fruit in imbricated heads, the involucral scales thick, pointed,

longer than the nut.—*Linn. sp.* (ed. 2.) 2. *p.* 1453; *Engl. bot. t.* 562; *Michx. fl.* 2. *p.* 227; *Pursh, fl.* 2. *p.* 620; *Bigel. fl. Bost. p.* 366; *Torr. compend. p.* 372; *Beck, bot. p.* 324.

A shrub 3 – 5 feet high, much branched. Leaves about two inches long and 5 – 6 lines wide, somewhat coriaceous, with several sharp serratures at the summit. Aments growing from the sides of the last year's shoots, appearing before the leaves are expanded. Bracts of the sterile aments brown and shining, slightly fringed with ferruginous hairs. Fertile ovate-oblong heads, which are covered with resinous grains; the scales lanceolate, acute, and forming an involucre which encloses the nut.

Borders of ponds and lakes, particularly in mountainous tracts; rare in the southern part of the State, but common in the northern counties. *Fl.* April – May. *Fr.* July. A native also of Europe and the north of Asia.

2. MYRICA CERIFERA, *Linn.* *Bayberry. Wax Myrtle.*

Leaves cuneate-lanceolate, serrated towards the summit or entire; sterile aments loose, the bracts naked; fruit spherical, naked, distinct.—*Linn. sp.* 2. *p.* 1453; *Michx. fl.* 2. *p.* 227; *Pursh, fl.* 2. *p.* 620; *Bigel. med. bot. t.* 43, *and fl. Bost. p.* 366; *Ell. sk.* 2. *p.* 678; *Torr. compend. p.* 372; *Beck, bot. p.* 324.

A shrub from 3 to 8 feet high, much branched at the summit. Leaves 2 – 4 inches long and from half an inch to nearly an inch wide, sometimes entire, pubescent underneath. Flowers appearing before the leaves are fully expanded. Sterile aments about half an inch long, scattered along the sides of the last year's twigs. Bracts rhombic. Stamens mostly 4, longer than the bracts; the filaments united below: anthers large. Fertile aments smaller than the sterile ones. Ovary ovoid, with about 3 cuneate scales at the base: styles filiform. Fruit aggregated, spherical and about the size of a peppercorn, consisting of a [illegible] with a hard and thick shell, which is thickly studded over with black lupid [illegible] and these again are encrusted with a dry white wax.

Dry soils, in thickets, etc.; common in the southern part of the State and on the sandy seacoast of Long Island, but rare in the interior. *Fl.* May. *Fr.* August – September. This species differs so much from the preceding, that it might with propriety be separated as the type of a distinct genus. The wax of the fruit consists chiefly of that peculiar ingredient of beeswax called *myricin*. It is obtained by boiling the berries in water, when it separates and is skimmed from the surface. It is employed for making candles, and as the basis of a kind of soap. In France and Germany, the plant has been cultivated for the sake of its wax. The singular black grains of the fruit are seen to advantage when the crust of wax has been removed from their surface by means of ether.

2. COMPTONIA. *Soland.; Gært. fruct.* 2. *p.* 58. *t.* 90. *SWEET FERN.*

[In honor of HENRY COMPTON, a Bishop of London of the last century, who was a cultivator of plants and a patron of botany.]

Flowers monœcious. STERILE FL. in cylindrical closely imbricated aments; the scales reniform-cordate, acuminate, 1-flowered. Calyx of two minute scarious sepals, persistent. Stamens 3 – 5; the anther-cells distinct, with a narrow connective. FERTILE FL. in globose aments: scales reniform, acute. Involucral scales 5 – 6, unequal, united at the base, subulate-linear, much longer than the ovary. Styles 2. Nut ovoid-oblong, smooth. — A fragrant shrub, with stipulate pinnatifid leaves.

1. COMPTONIA ASPLENIFOLIA, *Ait.* *Sweet Fern.*

Ait. Kew. 3. *p.* 334; *Gært. l. c.; Michx. fl.* 2. *p.* 203; *Pursh, fl.* 2. *p.* 635; *Ell. sk.* 2. *p.* 562; *Bigel. fl. Bost. p.* 340; *Torr. compend. p.* 349; *Beck, bot. p.* 324; *Darlingt. fl. Cest. p.* 52. Liquidambar asplenifolia, *Linn. sp.* 2. *p.* 999.

A shrub about two feet high, with numerous brownish shining branches. Leaves linear-lanceolate, 3 – 4 inches long, acute, pinnatifid, with rounded lobes: stipules semicordate, acuminate, often auriculate. Sterile aments terminal, several together, at first erect, finally incurved. Bracts hairy. Fertile aments lateral, presenting the appearance of a small bur, being covered with numerous long involucral scales. Nut brownish, compressed.

Dry woods and hill-sides. *Fl.* April – May. *Fr.* September. The plant emits a strong resinous aromatic scent, especially when bruised. It is a popular remedy in dysentery, but probably of little efficacy.

ORDER CI. BETULACEÆ. *L. C. Rich.* THE BIRCH TRIBE.

Flowers monœcious, in aments. STERILE FL. Bracts peltate, stipitate, scale-like, bracteolate on each side, 3-flowered. Calyx consisting of a single scale, or 4-sepalled. Stamens 4: filaments very short, distinct: anthers 1- or 2-celled. FERTILE FL. Bracts sessile, entire or 3-lobed, 2 – 3-flowered. Calyx none. Ovary 2-celled, with a single ovule suspended from near the summit of each cell: style none: stigmas 2, long and filiform. Fruit a little one-celled nut, which is often winged.— Trees or shrubs, with alternate simple serrate leaves and free caducous stipules.

1. BETULA. *Tourn.*; *Endl. gen.* 1840; *Spach in ann. sc. nat.* 1841, *p.* 193. BIRCH.

[Derived from *bet*, the Celtic name for the Birch.]

STERILE FL. Bracts with two bracteoles. Calyx consisting of a single scale. Anthers one-celled. FERTILE FL. Bracts 3-lobed, deciduous, 3-flowered. Nut lenticular, winged on each side. — Trees or shrubs. Fertile aments lateral, solitary.

1. BETULA POPULIFOLIA, *Ait.* (Plate CXII.) *White Birch.*

Leaves deltoid, much acuminated, unequally serrate, smooth on both sides; fertile aments on long peduncles, pendulous, cylindrical; lateral lobes of the bracts oblong, decurved-falcate. — *Ait. Kew.* (ed. 1.) 3. *p.* 336; *Michx. sylv. t.* 71; *Pursh, fl.* 2. *p.* 620; *Bigel. fl. Bost. p.* 355; *Torr. compend. p.* 355 (bis); *Beck, bot. p.* 325; *Hook. fl. Bor.-Am.* 2. *p.* 155. B. alba, *var.* populifolia, *Spach, l. c.*

A tree 20 – 25 feet high and seldom more than six inches in diameter, with numerous slender branches, and a thin white epidermis which cannot easily be split into laminæ. The leaves are 2 – 3 inches long, somewhat cordate at the base, conspicuously acuminate, smooth and shining: petiole about half an inch long. Sterile and fertile aments pedunculate; the latter at first erect, but at length mostly pendulous. Bracts with the lateral lobes a little curved backwards, minutely pubescent. Wings of the nut very thin and membranaceous, broader than the disk.

In poor soils, both in wet and in dry situations. *Fl.* April. *Fr.* August. The wood of this species is soft and white, speedily decaying when exposed to the weather, and unfit even for fuel.

2. BETULA PAPYRACEA, *Ait.* *Canoe Birch. Paper Birch.*

Leaves ovate, acuminate, somewhat doubly serrate, hairy on the veins underneath; fertile aments on short peduncles, pendulous, cylindrical; lateral lobes of the bracts short and rounded.—*Ait. Kew.* (ed. 1.) 3. *p.* 331; *Michx. sylv.* 1. *t.* 69; *Pursh, fl.* 2. *p.* 621; *Bigel. fl. Bost. p.* 355; *Torr. compend. p.* 355 (bis); *Hook. fl. Bor.-Am.* 2. *p.* 155. B. papyrifera, *Michx. fl.* 2. *p* 180. B. alba, *var.* papyracea, *Spach, l. c.*

A tree 40 – 70 feet high and 1 – 3 feet in diameter, with numerous slender shining branches which are dotted with white; the epidermis of the bark is white externally, thick, and divisible into numerous thin layers of a reddish tinge internally. Leaves 2 – 2½ inches long, slightly cordate, of a dark green color: petioles one-third of an inch long, smooth. Fertile aments an inch or more in length, and 4 – 5 lines in diameter. Bracts slightly pubescent; the lateral lobes much shorter than the middle one, scarcely diverging.

Woods in the northern parts of the State, abundant; also on the Catskill mountains, but scarce. *Fl.* April – May. *Fr.* Early in August. The wood of this species is excellent fuel. It has a close shining grain, and possesses considerable strength, but it is liable to rapid decay when exposed to the weather. Sometimes it is employed for making common furniture. The bark is used by the northern Indians for making their canoes.

3. BETULA LENTA, *Linn.* (Plate CXIII.) *Cherry Birch. Black Birch.*

Leaves cordate-ovate, acuminate, sharply serrate, the nerves underneath and the petioles hairy; fertile aments elliptical-ovoid, erect, or with the short peduncles recurved; bracts roughly pubescent, the lobes nearly equal, rather obtuse, diverging, prominently veined. — *Linn. sp.* (ed. 2.) 2. *p.* 1394; *Michx. sylv.* 1. *t.* 74; *Pursh, fl.* 2. *p.* 621; *Ell. sk.* 2. *p.* 617; *Bigel. fl. Bost. p.* 356; *Torr. compend. p.* 356; *Beck, bot. p.* 325; *Darlingt. fl. Cest. p.* 540; *Hook. fl. Bor.-Am.* 2. *p.* 156. B. carpinifolia, "*Ehrh. beitr.* 6. *p.* 99;" *Michx. fl.* 2. *p.* 181.

A tree 30 – 60 feet high and 1 – 2 feet in diameter, with numerous slender branches, which are of a dark chestnut-brown and speckled with white scars: cuticle of the bark smooth, grayish, and resembling that of the common cherry-tree. Leaves 2 – 3 inches long, more or less cordate at the base; when young, clothed with silky hairs, but finally smooth, except on the veins underneath and the petiole. Sterile aments 3 – 4 inches long, pendulous, terminal. Fertile aments (when in fruit) about an inch long, and half an inch or more in diameter; the peduncle 1 – 3 lines long, usually erect, but sometimes a little curved, so that the ament is horizontal. Bracts deeply 3-cleft, cuneate at the base. Nut elliptical, with a broad membranaceous margin which is somewhat fringed towards the summit.

In moist rich soils, throughout the State, except in the western counties, where it is rare. *Fl.* April. *Fr.* August. A very useful tree. The wood is of a reddish tint, close-grained and susceptible of a fine polish, so that it is much used for cabinet work. The young twigs give out a pleasant aromatic odor when bruised, on which account this species is often called *Sweet Birch.*

4. BETULA EXCELSA, *Ait.* *Yellow Birch.*

Leaves ovate, acute, serrate, smooth on both sides, the petiole pubescent; fertile aments ovoid-oblong, erect, on short peduncles; lobes of the bracts somewhat equal, acute, slightly diverging. — *Ait. Kew.* (ed. 1.) 3. *p.* 337; *Pursh, fl.* 2. *p.* 261; "*Duham. arb.* 3. *p.* 203. *t.* 52;" *Bigel. fl. Bost. p.* 356; *Torr. compend. p.* 355; *Beck, bot. p.* 325. B. lutea, *Michx. sylv.* 1. *t.* 73.

A tree 40 – 60 feet high and 1 – 2 feet in diameter. The epidermis is of a yellow color, and separates in narrow transverse ribbons which roll outwards at the ends. Leaves about 3 inches long, downy when young, but smooth (except the petiole) when fully grown. Fertile aments about an inch long and half an inch in diameter; the short peduncle sometimes bent at a right angle to the branch.

Woods and swamps in the northern and western parts of the State; common. *Fl.* April. *Fr.* August. The young twigs and bark are sweet-scented, but less so than in the preceding species. The wood is inferior in quality to that of the Black Birch, but is nevertheless much employed for cabinet work. Much of the firewood used in Boston is of the Yellow Birch; and the bark is excellent for tanning.

5. BETULA NIGRA, *Linn.* *Red Birch.*

Leaves rhomboidal-ovate, not acuminate, doubly serrate with the primary serratures coarse and angular, pubescent underneath, entire at the base; fertile aments ovoid-oblong, on short peduncles, erect; the bracts villous, with short oblong somewhat equal lobes. — *Linn. sp.* (ed. 2.) 2. *p.* 1394; *Pursh, fl.* 2. *p.* 621; *Ell. sk.* 2. *p.* 616; *Torr. compend. p.* 355; *Beck, bot p.* 325; *Darlingt fl. Cest. p.* 539. B. lanulosa, *Michx. fl.* 2. *p.* 181. B. rubra, *Michx. f. sylv.* 1. *t.* 72. B. angulata, *Lodd. bot. cab. t.* 1248.

A tree 40 – 70 feet high and 1 – 2½ feet in diameter, with long slender and pendulous branches; the epidermis of the smaller trunks of a reddish brown color, splitting (but not readily) into thin layers. Leaves about 3 inches long and 2 wide, often obtusely cuneate at the base, coarsely and somewhat angularly toothed, with the teeth serrated, light green above, pale underneath; the short petioles (and also the younger twigs) pubescent. Fertile aments about three-fourths of an inch long. Bracts cuneate at the base, pubescent, 3-lobed halfway to the base. Nut ovate, with a very broad thin winged margin.

Low grounds, particularly along rivers. Saugerties (*Mr. J. Carey*). *Fl.* April. *Fr.* June. A common species in New-Jersey, where it often attains a large size. The fruit of this species ripens earlier than that of any other of our Birches. The wood is light-colored and compact. The twigs are used for making birch brooms.

6. BETULA NANA, *Linn.* (Plate CXIV.) *Dwarf Birch.*

Dwarfish; branches often covered with resinous dots; leaves nearly orbicular, coarsely toothed, smooth; fertile aments oblong, on short erect peduncles; bracts deeply 3-cleft, the lobes oblong-obovate, nearly equal.—*Linn. sp.* (ed. 2.) 2. *p.* 1346; *Engl. bot. t.* 349; *Michx. fl.* 2. *p.* 180?; *Pursh, fl.* 2. *p* 622; *Bigel. fl. Bost. p.* 356; *Torr. compend. p.* 256; *Beck, bot. p.* 326; *Hook. fl. Bor.-Am.* 2. *p.* 157; *Tuckerman in Sill. journ.* 45. *p.* 31.

A shrub from one to two feet high, branching. Leaves from four lines to three-fourths of an inch in length, and nearly as broad as long, on very short petioles. Fertile aments less than half an inch long. Bracts somewhat veined underneath. Fruit broadly ovate, with a distinct and rather broad winged margin.

High mountains of Essex county. *Fr.* August. This dwarf species is also found on the White Hills, and about Hudson's Bay. It seems to be identical with the European plant. Spach, on account of the nearly wingless fruit, considers Michaux's *B. nana* as a distinct species, to which (*l. c. p.* 195) he has given the name of *B. Michauxii*. I find, however, the wing to vary in breadth, even in my European specimens.

Pursh states that the *B. pumila* grows in the high mountains of New-York and Pennsylvania, but I have seen no specimens collected within our limits. *B. glandulosa* seems to differ from it only in the glandularly dotted branches, a character which is probably not constant.

2. ALNUS. *Tourn.; Endl. gen.* 1841. *ALDER.*

[Name derived from the Celtic words, *al*, near, and *lau*, the bank of a river.]

STERILE FL. Bracts with five bracteoles. Calyx 4-parted. Anthers 2-celled. FERTILE FL. Bracts cuneate, truncate, persistent, thick, 2-flowered. Calyx consisting of four scales, which are adnate to the bracts, except at the summit. Fruit compressed, wingless, or rarely with a winged margin.—Trees or shrubs. Fertile aments ovoid or oblong, paniculate.

* EUALNUS. *Fruit not winged.*

1. ALNUS SERRULATA, *Willd.* (Plate CXV.) *Common Alder.*

Leaves obovate, somewhat coriaceous, finely and somewhat doubly denticulate-serrate, the veins underneath and their axils villous; fructiferous aments oblong-ovoid; stipules oval, obtuse; fruit ovate, not winged. — *Willd. sp.* 4. *p.* 336; *Pursh, fl.* 2. *p.* 623; *Michx. f. sylv.* 1. *t.* 75. *f.* 1; *Bigel. fl. Bost. p.* 342; *Ell. sk.* 2. *p.* 567; *Beck, bot. p.* 326; *Darlingt. fl. Cest. p.* 525. A. rubra, *Tuckerm. in Sill. jour.* 45. *p.* 33. Betula-Alnus rubra, *Marshall, arbust. p.* 20. B. serrulata, *Ait. Kew.* (ed. 1.) 3. *p.* 338. B.-Alnus serrulata, *Michx. fl.* 2. *p.* 181.

A shrub 6 – 12 feet high, irregularly branched, and usually growing in dense thickets. Leaves 2 – 5 inches long, more or less obovate, with a short acumination or obtuse, prominently veined, smooth above, paler and sprinkled with resinous dots underneath; the pubescence of the veins and axils mostly ferruginous: stipules caducous. Sterile aments appearing before the leaves, about two inches long, several together at the extremity of the branches: anthers bright yellow. Fertile aments somewhat paniculate on short naked branches, usually 3 – 4 together, densely flowered; in fruit, about half an inch long. Scales of the calyx free at the summit, so that the bracts appear 5-lobed at the apex. Fruit wingless, slightly margined.

Swamps and wet thickets; very common. *Fl.* March – April. *Fr.* September.

2. ALNUS INCANA, *Willd.* *Black Alder.*

Leaves thin, ovate or oblong, rather acute, obtuse or somewhat cordate at the base, slightly lobed, acutely serrate, glaucous and pubescent underneath, naked in the axils of the veins; stipules oblong-lanceolate; fertile aments oval; fruit orbicular, not winged. — *Willd. sp.* 4. *p.* 335; *Hook. fl. Bor.-Am.* 2. *p.* 157 (in part); *Tuckerm. l. c. p.* 32. A. incana, *var.* vulgaris, *Spach, l. c. p.* 206. A. glauca, *Michx. f. sylv.* 1. *t.* 75. *f.* 2. A. crispa, *Pursh, fl.* 2. *p.* 623 (in part). Betula incana, *Linn. suppl. p.* 417.

A shrub 8 – 20 feet high; the stem sometimes 3 – 4 inches in diameter, with a smooth brown bark. Leaves 2 – 4 inches long, often broadly ovate, pale glaucous green underneath,

slightly lobed or rather coarsely and obtusely toothed on the margin; the teeth finely serrate; the secondary veins strong and prominent. Stipule brown, pubescent. Fertile aments usually 4 – 5, in a paniculate raceme. Scales or bracts thickened at the tip; the scales of the calyx closely adnate, except at the summit. Fruit with a thin but not winged margin.

Borders of rivulets in the Catskill mountains. Banks of Esopus creek, near Saugerties (*Mr. J. Carey*). *Fr.* August. This species is also indigenous to Europe, and the northern parts of New-England and Canada.

** ALNASTER, Spach. *Fruit winged.*

3. ALNUS VIRIDIS, *DC.* (Plate CXVI.) *Mountain Alder.*

Leaves oval or ovate, obtuse or acute, rather obtuse at the base, doubly serrate, glutinous and pubescent underneath, or only the veins and axils pubescent; stipules broadly ovate; fertile aments on long pedicels; fruit with a broad winged margin. — *DC. fl. Fr.* 3. *p.* 304; *Cham. in Linnæa*, 6. *p.* 538; *Hook. fl. Bor.-Am.* 2. *p.* 156. A. incana, *Hook. l. c.* (in part). A. undulata, *Willd. sp.* 4. *p.* 336. A. ovata, *Lodd. bot. cab. t.* 1141 (ex *Loud.*). A. crispa, *Tuckerm. l. c. p.* 33. A. Mitchelliana, *Custis, ms.* (ex *Gray in Sill. journ.* 42. *p.* 42). "Betula viridis, *Vill. Delph.* B. ovata, *Schrank, fl. Bavar.* 1. *p.* 419." B. crispa, *Ait. Kew.* (ed. 1.) 3. *p.* 339. B.-Alnus crispa, *Michx. fl.* 2. *p.* 181. Alnaster viridis, *Spach, l. c. p.* 200.

A shrub 4 – 8 feet high, much branched; the branches often sprinkled with little warts. Leaves 2 – 4 inches long, varying from oblong-ovate to broadly cordate, deep green above; the under surface more or less pubescent (particularly on the veins), and covered with a thin resinous substance which causes the leaves to adhere to the paper when they are pressed; the margin sometimes obscurely lobed, finely and very sharply serrate. Fertile aments ovoid, obtuse, nearly three-fourths of an inch long; the pedicels often nearly an inch in length. Fruit with a broad membranaceous margin like that of a Betula.

Along the mountain streams of Essex county. *Fr.* August. Our plant agrees well with my European specimens, but differs somewhat from the *A. viridis* of the Northwest Coast, in the leaves being only doubly serrate, and not somewhat incisely lobed. It is the type of Spach's genus ALNASTER; but notwithstanding the peculiarity of the fruit, it is a true ALNUS. In *A. rubra*, Bong. (of Sitcha), the fruit is also winged, but less broadly than in *A. viridis*.

ORDER CII. SALICACEÆ. *L. C. Rich.* THE WILLOW TRIBE.

Flowers dicœcious, amentaceous, destitute of calyx and corolla, one under each bract. STERILE FL. Stamens 2 – 12 or more, sometimes monadelphous. FERTILE FL. Ovary 1-celled or imperfectly 2-celled, with numerous ascending ovules; styles 2, more or less united, very short: stigmas often 2-cleft or 2-parted. Capsule 1-celled, 2-valved; the valves finally revolute. Seeds numerous, furnished with a long silky coma. Albumen none. — Trees or shrubs, with alternate simple (serrated or entire) leaves which are furnished with stipules. The bark is usually bitter, and contains more or less of a peculiar principle called *salicine*. The wood is light, and of rapid growth.

1. SALIX. *Tourn.; Endl. gen.* 1903. *WILLOW. OSIER. SALLOW.*

[Derived from the Celtic words *sal*, near, and *lis*, water; in allusion to their place of growth.]

Bracts of the aments entire. Calyx and corolla none. STERILE FL. Torus gland-like. Stamens mostly 2, but often 3 – 5: filaments sometimes united at the base. FERTILE FL. Ovary with a gland at the base: styles short, united: stigmas small. — Trees or shrubs.

In describing the Willows of New-York, I have followed pretty closely the arrangement of Dr. Barratt, as given in Hooker's *Flora Boreali-Americana*, and afterwards in the printed descriptions accompanying the sets of North American Willows so generously distributed by this zealous botanist among his botanical friends.

* CINEREÆ, Barratt. *Aments oval or somewhat cylindrical, appearing before the leaves. Stamens 2. Ovary pedicellate. Leaves ovate, obovate or lanceolate, mostly entire, hoary, cinereous or woolly, often rugose, and the margin revolute. — Shrubs.*

1. SALIX CANDIDA, *Willd.* (Plate CXVII.) *White-leaved Willow.*

Leaves lanceolate or linear-lanceolate, acute, entire or obscurely serrulate towards the summit, the upper surface as well as the twigs clothed with a web-like pubescence, densely woolly and white underneath; stipules lunate, small; aments oblong-cylindrical, erect, densely flowered; scales obovate, obtuse, brown, clothed with long villous hairs; ovary ovoid-oblong, on a short pedicel, densely woolly; style short; lobes of the stigma 2-cleft. — *Willd. sp.* 4. *p.* 708; *Pursh, fl.* 2. *p.* 608; *Torr. compend. p.* 365; *Salict. Wob. t.* 90; *Hook. fl. Bor.-Am.* 2. *p.* 144. S. incana, *Michx. fl.* 2. *p.* 225, not of *Schrank*.

A shrub five feet or more in height; the young twigs of a reddish color, at first covered with a light wool, but finally smooth and shining. Leaves 3 – 4 inches long and about three-fourths of an inch wide, abruptly narrowed at the base into a short petiole, somewhat rugose; the upper surface of a dull grayish green, very white and woolly underneath: stipules shorter than the petioles. Aments about an inch long and one-fourth of an inch in diameter, on short

peduncles; the upper flowers (as in most of this section) expanding first: scales of the sterile aments much shorter than the woolly hairs that cover them. Ovaries covered with white wool, somewhat recurved, much longer than the scales: styles about one-fourth the length of the ovary.

Western part of the State (*Dr. Knieskern*). Michaux's name for this willow must yield to that of Willdenow, as *S. incana* of Schrank is an older species. I have what appears to be a variety of *S. candida*, collected by Dr. Sartwell near Penn-Yan, probably in a shady place. The leaves are pubescent and of a dull grayish green color underneath; the stipules are larger, obliquely ovate, with a short acumination; but in other respects the plants are alike.

2. Salix Muhlenbergiana, *Barratt.* *Muhlenberg's Willow.*

Leaves obovate-lanceolate, entire or remotely and obscurely denticulate, acute or slightly acuminate, even, smoothish above, grayish-tomentose underneath; stipules semiovate or lunate, half the length of the petiole; aments ovoid-cylindrical, densely flowered; scales ovate, obtuse, blackish, villous; ovary lanceolate, with a long slender beak; lobes of the stigma 2-cleft.—*Barratt, Sal. Amer. no.* 1 (not of *Willd.*). S. conifera, *Muhl. in neue Berl. schrift.* 4. *p.* 240. *t.* 6. *f.* 9; *Willd. sp.* 4. *p.* 705; *Pursh, fl.* 2. *p.* 612, excl. syn. *Michx.*; *Darlingt. fl. Cest. p.* 558 (not of *Wang.*).

A shrub 4 – 8 (or sometimes as much as 10) feet high; the branches brittle; the young twigs clothed with a close grayish pubescence, and often bearing small cones. Leaves 2 – 5 inches long and from three-fourths of an inch to more than an inch in diameter, prominently veined and densely tomentose underneath, acute at the base; the margin usually entire, but often somewhat waved or marked with a few obscure teeth, smooth and shining above: stipules acuminate. Buds dark brown. Sterile aments about three-fourths of an inch long; the upper flowers expanding first. Scales distinctly seen through the silky hairs that clothe them. Torus purple. Filaments white: anthers yellow. Fertile aments finally more than an inch long. Capsules spreading; their pedicels shorter than the scales, tapering into a long slender beak.

Borders of woods, and in copses; frequent. *Fl.* April. *Fr.* May. I have specimens of a variety of this species with obtuse and even emarginate leaves, collected by Dr. Sartwell near Penn-Yan. Dr. Barratt thinks *S. recurvata* of Pursh is only a narrow-leaved form of this species.

3. Salix tristis, *Ait.* (Plate CXVIII.) *Dwarf Downy Willow.*

Leaves narrowly cuneate-oblanceolate, acute at each end, strongly veined underneath and grayish-pubescent both sides or finally smoothish above, the margin nearly or quite entire, revolute; stipules none or caducous; aments globose-ovoid; scales roundish-obovate; stigmas 2-lobed; capsules on short pedicels, with a long beak.—*Ait. Kew.* (ed. 1.) 3. *p.* 393;

Muhl. l. c. & cat. p. 95 ; *Pursh, fl.* 2. *p.* 609 ; *Ell. sk.* 2. *p.* 668 ; *Beck, bot. p.* 318. S. tristis *β* Muhlenbergiana, *Willd. sp.* 4. *pp.* 692 & 693. S. longirostris, *Michx. fl.* 2. *p.* 226 ; *Darlingt. fl. Cest. p.* 558 ; *Barratt, Sal. no.* 2. S. villosa, *Sal. Wob. p.* 183. *t.* 92.

A low much branched shrub, 1 – 2 feet high, of a gray aspect, sometimes procumbent ; the branches brittle and grayish-pubescent when young, sometimes with small cones at the extremity. Buds pubescent. Leaves 1 – 2 inches long and 2 – 6 lines wide, somewhat rugose and densely woolly underneath ; the upper surface finally smoothish, but dull and of a gray color. Stipules never seen by me. Aments very small, loosely flowered and numerous, about one-third of an inch long when first expanded, but the fertile half an inch in length when in fruit. Buds brown and pubescent. Scales very villous, obovate, blackish at the tip. Anthers at first reddish, changing to yellow. Ovaries white and villous : style very short : stigmas oblong, deeply 2-lobed.

Dry sandy soils, and on hill-sides ; frequent. *Fl.* April. *Fr.* May. The smallest of our lowland willows.

** DISCOLORES, Barratt. *Aments oval or cylindrical, appearing before the leaves, clothed with silky hairs or smoothish. Scales blackish. Stamens* 2 ; *the filaments distinct, or united below. Ovary pedicellate. Leaves deciduous, somewhat coriaceous, serrate or denticulate, smooth and shining above, glaucous or pubescent underneath. — Trees or shrubs.*

4. SALIX DISCOLOR, *Muhl.* *Glaucous Willow.*

Leaves oblong or obovate-oblong, rather obtuse or with a short acumination, remotely serrulate-toothed, at first somewhat pubescent, but finally smooth, glaucous underneath ; stipules lunate, acuminate ; aments oblong-cylindrical, the sterile very silky and white ; scales obovate ; ovaries on pedicels shorter than the scales, with a long tapering beak ; style conspicuous ; lobes of the stigma deeply 2-parted. — *Muhl. l. c. p.* 234. *t.* 6. *fig.* 1, *and cat. p.* 95 ; *Pursh, fl.* 2. *p.* 613 ; *Ell. sk.* 2. *p.* 669 ; *Bigel. fl. Bost. p.* 364 ; *Torr. compend. p.* 369 ; *Darlingt. fl. Cest. p.* 559 ; *Hook. fl. Bor.-Am.* 2. *p.* 147 ; *Sal. Wob. p.* 279. *f.* 147 ; *Barratt, Sal. no.* 3.

Stem six feet or more in height, with brownish or greenish tough branches which are pubescent when young. Flower-buds large and smooth, each formed of one dark brown exterior scale and three linear silky bracts. Leaves 2 – 5 inches long and from an inch to nearly two inches wide, with the serratures more or less distinct, deep green and somewhat shining above, strongly glaucous underneath, sometimes obtuse and unequal at the base : petioles half an inch or more in length. Stipules often toothed. Aments an inch long, thick and compact ; the sterile beautifully silky and white, with the black scales indistinctly visible through the hairs, expanding (as in most of this section) from above downward. Stamens distinct. Capsules spreading, white. Style longer than the lobes of the stigma.

Swamps and borders of rivers ; frequent. *Fl.* Early in April. *Fr.* May.

*** GRISEÆ, Barratt. *Aments ovoid-cylindrical, appearing before the leaves. Stamens 2. Ovaries sessile or stipitate, silky-gray. Leaves lanceolate, serrate, silky gray underneath, dryeng black. — Shrubs with brittle branches.*

5. SALIX PETIOLARIS, *Smith.* *Dark Long-leaved Willow.*

Leaves lanceolate, serrate, grayish underneath, with short silky hairs, finally almost naked above; stipules lunate, deciduous; fertile aments loose; scales black at the tip; ovaries pedicellate, ovoid-lanceolate, very silky; stigmas nearly sessile, 2-parted; scales scarcely longer than the pedicel.—*Smith in Linn. trans.* 6. *p.* 122; *Willd. sp.* 4. *p.* 665; *Engl. bot. t.* 1147; *Pursh, fl.* 2. *p.* 616; *Sal. Wob. t.* 23; *Barratt, Sal. no.* 9; *Loud. enc. tr. & shr. p.* 765. S. grisea, *var.* subglabrata, *Koch, comm. p.* 21 (ex *Loud.*).

var. *grisea:* leaves more silky underneath; aments cylindrical. — S. grisea, *Willd. sp.* 4. *p.* 699; *Pursh, fl.* 2. *p.* 616; *Darlingt. fl. Cest. p.* 516; *Barratt, Sal. no.* 10. S. sericea, *Muhl. l. c.* (not of *Villars*). S. Pennsylvanica, *Sal. Wob. t.* 95 (ex *Barratt*).

Stem 4 – 10 feet high; the twigs varying from greenish to purple, tough and elastic, but brittle at the base. Leaves 2 – 4 inches long and 6 – 9 lines wide, finely and rather sharply serrate, the serratures tipped with a minute gland, nearly or quite smooth above except on the midrib; the underside more or less silky-pubescent, and of a glaucous hue: petioles 3 – 6 lines long: stipules small, toothed. Buds brown and smooth. Sterile aments from half an inch to three-fourths of an inch long, with a few rudimentary leaves at the base; the middle flowers usually expanding first. Scales obovate, very obtuse. Anthers at first reddish, then yellow and finally brown. Fertile aments dense, sometimes recurved, in fruit about an inch long; the peduncles at first naked, finally somewhat leafy. Ovaries remarkably white and silky, tapering to a conical point but not rostrate, crowned with the short but usually distinct style and small 2-lobed stigmas.

Sandy banks of rivers; frequent in the western parts of the State, but somewhat rare along the Hudson. *Fl.* Middle of April. *Fr.* May. This species was many years ago adopted by mistake as a native of Scotland, and has even since obtained a place in British Floras; but there can be little doubt that the plant described by Sir J. E. Smith was of North American origin, as Pursh and Lindley have both asserted. I can find no essential characters in which *S. grisea* differs from *S. petiolaris;* and as the latter name is the older, it has been adopted. Koch and Borrer are of opinion that the two are not specifically distinct; and I suspect that *S. fuscata* of Pursh must be joined with them. — The twigs and branches are very tough, and are much valued by the basket-maker.

6. SALIX MYRICOIDES, *Muhl.* *Gale-leaved Willow*

Leaves oblong-lanceolate, acute or acuminate, rather sharply serrulate, smooth, glaucous underneath; stipules lunate-ovate; aments leafy at the base; scales black and villous; ovaries lanceolate, on a long pedicel, smooth; style distinct; stigmas 2-lobed. — *Muhl. l. c. p.* 235. *t.* 6. *f.* 2; *Willd. sp.* 4. *p.* 666; *Pursh, fl.* 2. *p.* 613; *Barratt, Sal. no.* 11.

A shrub 6 – 9 feet high: branches tough; the larger ones green, and the small twigs purplish. Buds large, purplish brown, smooth. Leaves 3 – 4 inches long and an inch or more wide, mostly acuminate, rather acute at the base, a little coriaceous, bright green and somewhat shining above, glaucous and either quite smooth or only sprinkled with a few appressed hairs underneath: serratures tipped with a minute gland. Stipules conspicuous, serrate. Aments flowering from above downward. Scales obtuse. Anthers yellow. Gland elongated. Pedicel of the ovary very conspicuous.

Swamps and wet places. Flowers about the middle of April.

**** VIMINALES, Borrer. *Aments appearing before the leaves. Stamens* 2. *Ovaries nearly sessile, hairy or silky: styles elongated: stigmas mostly entire. Leaves lanceolate. — Trees or shrubs, with long pliant branches.*

7. SALIX VIMINALIS, *Linn.* *Basket Osier.*

Leaves linear-lanceolate, obscurely crenate, white and silky underneath; stipules very small, lanceolate; ovaries nearly sessile, lanceolate-subulate; style elongated; stigmas long and linear, mostly undivided. — *Linn. sp.* (ed. 2.) 2. *p.* 1448; *Engl. bot. t.* 1898; *Pursh, fl.* 2. *p.* 608; *Bigel. fl. Bost. p.* 365; *Sal. Wob. t.* 133; *Barratt, Sal. no.* 13.

A large shrub or small bushy tree, with long straight and slender branches; the young twigs yellowish and pubescent. Buds light colored, pubescent. Leaves 3 – 6 inches long, of a satiny lustre underneath, tapering to a long point. Aments numerous, cylindrical-ovate, thick and densely clothed with long silky hair, the upper flowers expanding first: anthers yellow. Ovaries silky, long and narrow; the style as long as the stigmas.

Wet meadows. Introduced from Europe, and considered the best willow for basket-work and small hoops. *Fl.* April.

***** FRAGILES, Barratt. *Aments pedunculate, cylindrical, loose, acuminate, appearing either before or with the leaves. Scales greenish yellow. Stamens* 2 – 5. *Ovaries smooth. Leaves lanceolate, serrate or entire. — Trees.*

8. SALIX LUCIDA, *Muhl.* (Plate CXIX.) *Glossy Broad-leaved Willow.*

Leaves ovate-oblong, cuspidate-acuminate, glandularly serrate, smooth and shining on both sides; stipules roundish or oblong, serrate; aments accompanying the leaves; stamens 3 – 5, bearded at the base; scales oblong, hairy at the base, smooth at the apex, obtusely toothed; ovaries lanceolate-subulate, smooth, their pedicels about half the length of the scales; stigmas 2-lobed, about as long as the style. — *Muhl. l. c. t.* 6. *f.* 7; *Willd. sp.* 4. *p.* 667; *Michx. sylv.* 2. *t.* 125. *f.* 3; *Pursh, fl.* 2. *p.* 615; *Darlingt. fl. Cest. p.* 560; *Sal. Wob. t.* 32 (mas); *Hook. fl. Bor.-Am.* 2. *p.* 148; *Barratt, Sal. no.* 17.

A shrub 8 – 15 feet high, with shining yellowish brown bark. Buds yellowish, smooth. Leaves 3 – 5 inches long and an inch or more in width, rather obtuse when young, but at maturity tapering to a long slender point, rather acute at the base; the serratures tipped with minute glands, which are blackish late in the season; besides which, there are usually several stipitate glands at the base: petiole nearly half an inch long. Sterile aments an inch and a

half long, on short leafy branches; the scales pale yellow, obtuse, hairy on the inside and below the middle; the upper part smooth on the outside. Stamens mostly 5. Fertile aments an inch long, rather loose. Ovaries slender, with a long tapering beak: lobes of the stigmas oblong. Mature capsules with ovoid base and a conical beak.

Banks of rivers which are frequently overflowed; not uncommon. *Fl.* Middle of May. *Fr.* June. A very handsome willow; nearly allied to *S. pentandra* of Europe, and perhaps not distinct from that species.

9. Salix nigra, *Marshall.* *Black Willow.*

Leaves lanceolate, very acute, serrulate, smooth and green on both sides, the petiole and upper side of the midrib woolly; stipules small, lunate, caducous; aments appearing with the leaves; scales oblong, very villous; stamens 3 – 6, bearded at the base; ovaries oblong, smooth, their pedicels about one-third the length of the scales; stigmas short, 2-lobed, nearly sessile. — *Marsh. arbust. p.* 293; *Muhl. l. c. t.* 6. *f.* 5; *Willd. sp.* 4. *p.* 657; *Pursh, fl.* 2. *p.* 614; *Ell. sk.* 2. *p.* 670; *Darlingt. fl. Cest. p.* 559; *Hook. fl. Bor-Am.* 2. *p.* 148; *Barratt, Sal. no.* 20. S. pentandra, *Walt. fl. Car. p.* 243. S. Caroliniana, *Michx. fl.* 2. *p.* 226; *Michx. f. sylv. t.* 125. *f.* 1?

var. *falcata:* leaves linear-lanceolate, more or less falcate. — S. nigra, *Pursh, l. c.; Sal. Wob. t.* 148; *Hook. fl. Bor.-Am.* 2. *p.* 149. S. Purshiana, *Spreng. syst.* 3. *p.* 608; *Beck, bot. p.* 320; *Darlingt. fl. Cest. p.* 560; *Barratt, Sal. no.* 21.

A tree of the height of 15 or 20 feet, and sometimes a foot or more in diameter, with a dark rough bark. The branches are very brittle at the base, but the small twigs are tough, and of a purplish or sometimes yellowish color. Leaves about three inches long and half an inch wide, with a long slender point, finely serrulate, pubescent when young, but smooth when fully grown, except the petiole and along the midrib on the upper side. Stipules broadly lunate or semiorbicular, serrate. Sterile aments $1\frac{1}{2}$ – $2\frac{1}{2}$ inches long. Scales oblong, obtuse, villous all over. Stamens mostly 5. Fertile aments 1 – $1\frac{1}{2}$ inch long, slender. Capsules with a long obtuse conical point from an ovoid base; their pedicels finally more than half the length of the scale.

Banks of rivers, and in low grounds; frequent. *Fl.* About the middle of May. *Fr.* June. After a careful examination of *S. falcata*, I cannot find sufficient characters for keeping it separate from *S. nigra*. The form of the leaves is not constant, for they are by no means always falcate.

10. Salix longifolia, *Muhl.* *Long-leaved Sand Willow.*

Leaves lanceolate-linear, elongated, acute at each end, nearly sessile, remotely denticulate with salient teeth, green on both sides and finally almost smooth; stipules small, lanceolate; aments expanding with the leaves, on villous leafy peduncles, sometimes androgynous; scales

hairy, mostly retuse or toothed at the summit, in the fertile aments nearly as long as the ovary ; stamens 2 ; ovaries lanceolate, pubescent ; stigmas large, sessile, 2-parted.—*Muhl. l. c. t.* 6. *f.* 6 ; *Willd. sp.* 4. *p.* 670 ; *Pursh, fl.* 2. *p.* 613 ; *Hook. fl. Bor.-Am.* 2. *p.* 148 ; *Barratt, Sal. no.* 23.

This shrub is usually about two feet high ; but in favorable situations, according to Dr. Barratt, it occasionally rises to the height of from 8 to 12 feet : the stems or branches often prostrate, and rooting extensively. The bark is purplish brown, grayish-pubescent on the young twigs, but smooth late in the season. Leaves on the long upright shoots 3 – 4 inches long, smaller on the short suckers which arise from the prostrate stems, at first sparsely clothed with short appressed grayish hairs, tapering at the base and nearly sessile ; the margin furnished with minute sharp projecting teeth, which are tipped with a black gland. Sterile aments an inch and a half in length, cylindrical ; the scales broadly obovate and moderately villous all over. Stamens about half the length of the scale : filaments hairy below : anthers yellow. Fertile aments an inch long, loose ; the scales naked at the tip. Ovaries on short pedicels.

Banks of rivers. Rochester (*Prof. Dewey*). *Fl.* Early in May ; sometimes flowering again from the ends of the twigs late in the season. The sterile plant only was found by Prof. Dewey. The favorite situation of this species is the drifting sand of rivers, in which it spreads extensively and rapidly ; so that Dr. Barratt has recommended it for protecting sandy embankments.

****** ALBÆ, Borrer. *Aments loose. Stamens* 2. *Ovaries smooth. Leaves lanceolate, serrate, silky-pubescent underneath ; the serratures glandular.— Trees.*

11. SALIX VITELLINA, *Linn.* *Yellow Willow.*

Leaves lanceolate, with glandular serratures, acuminate, tapering at the base, more or less silky-pubescent underneath and often also above ; aments accompanying the leaves ; ovaries lanceolate, sessile, smooth, about the length of the scale ; style short ; stigmas 2-lobed.— *Linn. sp.* (ed. 2.) 2. *p.* 1442 ; *Willd. sp.* 4. *p.* 668 ; *Engl. bot. t.* 1389 ; *Pursh, fl.* 2. *p.* 616 ; *Bigel. fl. Bost. p.* 365 ; *Sal. Wob. t.* 20 ; *Darlingt. fl. Cest. p.* 562 ; *Barratt, Sal. no.* 24.

A large tree (30 – 40 feet high) ; the branches numerous, rather erect ; the twigs yellowish, smooth and shining. Leaves 2 – 3 inches long and 6 – 8 lines wide ; the young ones often obtuse, at first silky both sides, but finally smooth above, silky and glaucous underneath : petioles about one-third of an inch long. Stipules minute, lanceolate, deciduous. Sterile aments not seen. Fertile aments 1 – 2 inches long, on peduncles or short branches which are leafy at the base. Scales ovate-lanceolate, acute, hairy, mostly a little longer than the ovaries.

About houses and in wet meadows ; introduced from Europe, and now common throughout the United States. *Fl.* May. *Fr.* June. Koch unites this species with *S. alba.*

******* FULVÆ, Barratt. *Aments cylindric-ob., expanding with the young leaves, fulvous. Scales villous. Stamens* 2; *the filaments dilated. Capsules on long pedicels, long, ovoid-c.*

12. SALIX ROSTRATA, *Richards.* *Ochre-flowered Willow.*

Leaves oblong- or obovate-lanceolate, acute, entire, toothed or waved on the margin, hoary-pubescent and glaucous underneath, smoothish above; stipules lunate or ovate, toothed; sterile aments densely flowered, the fertile at length much elongated; capsules with the pedicels longer than the scales, attenuated into a long slender beak; style almost wanting; stigmas 2-cleft. — *Richards. app. Frank.* 1*st jour.* (ed. 2.) *p.* 37, excl. syn. *Sm.*; *Hook. fl. Bor.-Am.* 2. *p.* 147; *Barratt, Sal. no.* 25.

A shrub 4 – 15 feet high, with numerous straight tough reddish brown twigs, which are pubescent when young, but finally smooth. Leaves 2 – 4 inches long, prominently veined and almost velvety underneath, sometimes rather obtuse, varying from almost entire to pretty sharply serrate-toothed: petiole 3 – 5 lines long. Aments on leafy peduncles; the sterile very densely flowered, about an inch long; the scales oblong, longer than the hairs which clothe them. Fertile aments (when mature) nearly two inches long; the capsules loose and spreading, on very long and slender pedicels.

Borders of swamps. Western part of the State (*Dr. Knieskern and Dr. Sartwell*). *Fl.* Middle of April. Near Oriskany, and at Rome, Dr. Knieskern found small trees of this species, which, in April, were loaded with sterile aments; and about the middle of May, when the leaves were fully grown, there appeared a second set of aments, which were androgynous, being fertile above and staminiferous below. In some of the aments there were perfect flowers, with from one to three stamens, and one, two or three ovaries.

******* CORDATÆ, Barratt. *Aments on short peduncles, scales pale brown, appearing with the leaves; the scales somewhat ciliate. Stamens* 2 *or* 3. *Ovaries pedicellate, smooth. Leaves often cordate at the base, smooth. Stipules semi-cordate, serrate. — Low shrubs with smooth flexible branches.*

13. SALIX CORDATA, *Muhl.* *Heart-leaved Willow.*

Leaves oblong-lanceolate, acuminate, cordate at the base, acutely serrate, smooth, paler underneath; stipules large, roundish-ovate; aments appearing with the leaves; scales ovate-lanceolate, woolly, black; stamens mostly 2; ovaries pedicellate, ovoid-oblong, tapering above, smooth; style very short; stigmas 2-cleft.—*Muhl. l. c. p.* 236. *t.* 6. *f.* 3; *Willd. sp.* 4. *p.* 666; *Pursh, fl.* 2. *p.* 615; *Sal. Wob. t.* 142; *Hook. fl. Bor.-Am.* 2. *p.* 149; *Beck, bot. p.* 321; *Barratt, Sal. no.* 26.

A shrub 3 – 6 feet high, with smooth yellowish green pretty tough branches; flowering twigs smoothish and red; the young sterile twigs pubescent or villous. Buds brownish. Leaves 3 – 5 inches long, and from three-fourths of an inch to an inch wide, pubescent on the midrib underneath, the base mostly unequal and cordate or somewhat auriculate: serratures glandular or callous: petioles more or less pubescent, 4 – 6 lines long, without glands.

Stipules conspicuous, sharply serrate. Sterile aments about an inch long, on short leafy peduncles, the flowers at the summit opening first. Scales shorter than the hairs that clothe them. Stamens unequal: anthers yellow. Fertile aments, when half mature, an inch and a half long. Ovaries rather obtuse, the pedicels nearly twice the length of the scale: stigmas shortly 2-lobed.

Banks of rivers that are often overflowed. *Fl.* April. *Fr.* May. A widely diffused and handsome willow; the twigs of which, according to Dr. Barratt, are very suitable for basket-work.

14. SALIX RIGIDA, *Muhl.* *Rigid Heart-leaved Willow.*

Leaves oblong-lanceolate, acuminate, cordate at the base, serrate, smooth, paler underneath; stipules very large, reniform-ovate, serrate; aments elongated, appearing with the leaves; stamens mostly 2; scales lanceolate, very silky; ovaries conspicuously pedicellate, lanceolate, smooth; style distinct; stigmas 2-parted.—*Muhl. l. c. p.* 237. *t.* 6. *f.* 4; *Willd. sp.* 4. *p.* 667; *Pursh, fl.* 2. *p.* 615; *Hook. fl. Bor.-Am.* 2. *p.* 149; *Barratt, Sal. no.* 27. S. cordata, *Michx. fl.* 2. *p.* 225.

A shrub or small tree from 6 – 15 feet high, throwing up strong and tough twigs which are of a reddish color. Leaves 4 – 6 inches long and 1 – 2 inches wide, very smooth on both sides, finely denticulate-serrate, with the serratures incurved: petiole 6 – 8 lines long, not glandular, slightly pubescent along the upper side. Stipules conspicuous. Aments on short leafy peduncles; the sterile ones 1 – 1½ inch long, very silky: scales reddish brown, shorter than the silky hairs. Fertile aments 1½ – 2 inches long. Ovaries tapering to a long slender summit: stigmas small, the lobes moderately 2-cleft: pedicels about one-third longer than the scales at their base.

Wet places along rivers. *Fl.* Middle of April. *Fr.* May. A handsome species, which, as Dr. Barratt remarks, is well suited for heavy kinds of baskets.

********* ARBUSCULÆ, Barratt. *Small erect shrubs, with late flowers.*

15. SALIX PEDICELLARIS, *Pursh.* (Plate CXX.) *Long-stalked Willow.*

Leaves obovate-elliptical, rather acute or obtuse, entire, smooth on both sides, reticulately veined and slightly glaucous underneath; stipules none; aments accompanying the leaves, pedunculate; stamens 2; capsules oblong-conical, smooth, the pedicels twice as long as the slightly hairy scale; style very short; stigmas 2-cleft.—*Pursh. fl.* 2. *p.* 611; *Torr. compend. p.* 366; *Beck, bot. p.* 319; *Hook. fl. Bor.-Am.* 2. *p.* 450. S. myrtilloides, *Tuckerman in Sill. journ.* 45. *p.* 34, not of *Linn.?*

A shrub with an ascending virgate stem which rises to the height of from 1 – 3 feet, usually naked, simple below and furnished with short leafy branches above; the bark smooth and brownish. Leaves 12 – 18 lines long, usually more or less obtuse at each end, some-

what coriaceous: petioles 1 – 2 lines long. Aments terminating the leafy branches, about three-fourths of an inch long, rather few-flowered: capsules of a reddish color mixed with green, tapering from an obtuse base; the pedicels very slender.

Sphagnous swamps. Catskill mountains (*Pursh*); Lodi, Seneca county (*Dr. Folwell*); near Oriskany (*Dr. Knieskern*). *Fl.* May. A low, very distinct and neat species, which my friend Mr. Tuckerman thinks is not distinct from *S. myrtilloides*, Linn., but I am not yet satisfied that they are the same.

********** PROSTRATÆ, Barratt. *Aments peduncled, appearing with the leaves. Humble, somewhat creeping or prostrate shrubs.*

16. SALIX CUTLERI, *Tuckerman.* *Cutler's Willow.*

Depressed; leaves elliptical and acute, or obovate and obtuse, always acute at the base, glandularly denticulate, smooth and somewhat shining above, glaucous underneath; aments appearing with the leaves, pedunculate, oblong-cylindrical, compact; stamens solitary; capsules ovoid-conical, on short pedicels, smooth; scales obovate (blackish), silky; style distinct; lobes of the stigma 2-cleft.—*Tuckerman, l. c. p.* 36. S. Uva Ursi, *Pursh, fl. 2. p.* 610?; *Torr. in Geol. report for* 1840; *Oakes pl. N. Eng. in Hovey's Mag. June*, 1841.

Stem depressed and much branched, smooth. Leaves mostly obovate, from half an inch to an inch long and 3 – 6 lines wide, usually obtuse at the summit, tapering at the base into a short petiole. Aments about half an inch long and 2 lines wide, on short leafy peduncles, very silky when young. Scales of the sterile aments bearing a single stamen: anther roundish. Capsules tapering into a distinct style, very small.

Summit of Mount Marcy, Essex county. Also on Whiteface (*Prof. Hall*). *Fl.* June.

The aments of this species sometimes produce an anomalous inflorescence. In the female plant (as it seems to be) the ovary is abortive, and in its place is a stipe bearing a perfect 2-celled anther at its summit with the cells opening in the usual way, and discharging pollen; the apparent connective being produced into a short style, which is tipped with an entire stigma. In the same ament are found 2-lobed pedicellate abortive ovaries, each with a short style and simple stigma.

2. POPULUS. *Tourn.; Endl. gen.* 1904. *POPLAR.*

[From the Latin, *populus*, the people; having been used in ancient times as a shade tree for public walks.]

Bracts of the aments laciniated at the extremity. Torus urceolate, obliquely truncated. Stamens 8 – 12 or more.—Trees, often with pyramidal heads, and usually broad, more or less ovate or cordate toothed leaves. Buds covered with a resinous varnish. Flowers appearing before the leaves.

1. POPULUS TREMULOIDES, *Michx.* *American Aspen.*

Leaves cordate-orbicular, with a short abrupt acumination, serrulate-dentate, pubescent on the margin, green and smooth on both sides; bracts of the ament mostly 3-parted, silky at the tip; stigmas 2, sessile.—*Michx. fl. 2. p. 243; Michx. f sylv. 2. t. 99. f. 1; Bigel. fl. Bost. p. 369; Torr. compend. p. 375; Beck, bot. p. 323; Darlingt. fl. Cest. p. 568; Hook. fl. Bor.-Am. 2. p. 154.*

A tree 20 – 50 feet high and 6 – 12 inches in diameter; the bark (except on large trunks) smooth and whitish. Leaves about 2 inches long, the breadth usually rather greater than the length, smooth on both sides when mature, the margin slightly ciliate, rarely with two glands at the base: petiole about as long as the leaf, very slender, laterally compressed so as to be almost ancipital. Aments 2 – 3 inches long, pendulous, villous when young; the scales brown, cuneate-oblong, divided below the middle into three parallel lobes, and often a small lateral lobe on each side. Stamens about 12. Stigmas with 2 divaricate linear lobes. Capsule oblong-ovoid, about 2 lines long, distinctly pedicellate.

Woods and hill-sides, both in moist and dry situations; common. *Fl.* March – April. *Fr.* May.

Pursh, Hooker, Darlington and Loudon consider *P. trepida* of Willdenow as identical with this species, while Muhlenberg regards it the same as *P. grandidentata.* We have adopted the latter view.

2. POPULUS GRANDIDENTATA, *Michx.* (Plate CXXI.) *Large Aspen.*

Leaves roundish-ovate, acute, coarsely sinuate-toothed, smooth on both sides when mature (white and woolly when young); ovary ovoid-lanceolate; lobes of the stigma linear.—*Michx. fl. 2. p. 243; Michx. f. sylv. 2. t. 99. f. 2; Pursh, fl. 2. p. 619; Bigel. fl. Bost. p. 369; Ell. sk. 2. p. 710; Torr. compend. p. 175; Beck, bot. p. 323; Darlingt. fl. Cest. p. 569; Hook. fl. Bor.-Am. 2. p. 154;* P. trepida, *Willd. sp. 4. p. 803.*

A tree 30 – 50 feet high, sparingly branched, with a trunk 8 – 18 inches in diameter, and smoothish gray bark. Twigs terete. Leaves 3 – 5 inches in diameter, when young clothed with a dense whitish woolly pubescence, obtuse or truncate at the base, sometimes with 2 small glands near the insertion of the petiole, the margin furnished with large unequal teeth: petioles about 2 inches long, compressed towards the lamina (as is usual in this genus). Stipules lanceolate, caducous. Flowers appearing long before the leaves. Aments 3 – 4 inches long, villous. Rachis, pedicels and torus hairy. Bracts cuneate-fanshaped; the summit laciniately 5-cleft, and fringed with silky hairs. Fertile ament shorter than the sterile. Stamens mostly 12. Capsules on short pedicels.

Moist woods; common in many parts of the State, particularly in the southern counties and along the Hudson river. *Fl.* April. *Fr.* May.

3. POPULUS MONILIFERA, *Ait.* *Virginian Poplar.*

Young branches scarcely angled, broadly deltoid-subcordate, acuminate, serrate-toothed, smooth on both sides, nearly entire at the base; scales of the ament lacerately ciliate, not hairy; rachis and pedicels smooth; ovary globose-ovoid; stigmas 3 – 4, nearly sessile, very large and dilated —*Ait. Kew.* (ed. 1.) 3. *p.* 406; *Michx. f. sylv.* 2. *p.* 113. *t.* 96. *fig.* 2; *Loud. enc. tr. & shr. p.* 825; *Willd. sp.* 4. *p.* 805; *Pursh, fl.* 2. *p.* 618; *Beck, bot. p.* 313.

A tree 40 – 70 feet high and 1 – 3 feet in diameter, with spreading terete branches; the young shoots with slight angles, which finally are obliterated. Leaves 2 – 3 inches long, the breadth equaling the length, truncate or somewhat cordate at the base, which is either even or only furnished with a few obscure gland-like teeth: serratures of the margin rather blunt and a little incurved. Sterile aments not seen. Fertile aments finally 2 – 6 inches long. Scales light brown, roundish, cut round the margin into numerous irregular narrow segments. Torus smooth. Stigmas 3 – 4 (or 2 and deeply 2-parted, one of the lobes often wanting), much dilated, undulate-toothed.

Western part of the State, particularly near Oneida lake and along the Genesee river. *Fl.* April. *Fr.* May. It is remarkable that neither the elder nor younger Michaux found this poplar in any part of North America, for it is by no means a rare species.

4. POPULUS HETEROPHYLLA, *Linn.* *Cotton-tree.*

Branches terete; leaves ovate or roundish-ovate, obtuse, serrate, cordate at the base, with the small sinus closed by the overlapping lobes, clothed with a white tomentum when young, but finally almost or quite smooth except on the veins; ovaries globose-ovoid, on long pedicels; style conspicuous; stigmas deeply 2-lobed, rather large.—*Linn. sp.* (ed. 2.) 2. *p.* 1464; *Michx. fl.* 2. *p.* 244; *Pursh, fl.* 2. *p.* 619; *Torr. compend. p.* 375; *Beck, bot. p.* 323. P. argentea, *Michx. f. sylv.* 2. *t.* 97.

A tree 40 – 60 feet high and 1 – 2 feet in diameter. Leaves 3 – 6 inches long (on young sprouts sometimes 8 – 10 inches long and 7 – 9 inches wide), more or less ovate, never acuminate and usually quite blunt, when young covered with a thick white down, which at length disappears entirely from the upper surface, and even from the under side except on the veins, mostly cordate, with the small auriculate lobes folded over each other so as to conceal the insertion of the petiole: serratures small and obtuse: petiole nearly round. Sterile aments not seen, but, according to the elder Michaux, the flowers are polyandrous. Fertile aments very smooth, in fruit about 6 inches long, the pedicels nearly as long as the distant capsules: style somewhat persistent, longer than in any other North American Poplar.

Swamps, Staten Island, about three miles south of the Quarantine, and on Long Island: Putnam county (*Dr. Barratt*).

5. POPULUS NIGRA, *var.* BETULIFOLIA. *Birch-leaved Poplar.*

Young branches pubescent; leaves deltoid-rhomboid, conspicuously acuminate, finely crenate-serrate, smooth on both sides.—P. nigra, *Michx. fl.* 2. *p.* 244? P. Hudsonica, *Michx. f. sylv.* 2. *p.* 114. *t.* 96. *fig.* 1; *Torr. compend. p.* 375; *Beck, bot. p.* 323. P. betulæfolia, *Pursh, fl.* 2. *p.* 619; *Loud. enc. tr. & shr. p.* 825.

A tree 30 – 50 feet high and 1 – 2 feet in diameter, with a large spreading head; the young branches yellowish. Buds brown. Leaves about $2\frac{1}{2}$ inches long, tapering to a long point, serrate at the obtusely cuneate base, as well as on the rest of the margin: petiole rather more than half the length of the lamina, moderately compressed except at the base, which is nearly terete. Aments not seen, but according to Michaux they are 4 – 5 inches long, and destitute of the hairs that occur in several other species.

Banks of the Hudson, above Albany (*Michaux*). I have not seen this species within the limits of the State, and Michaux himself never found the tree except in the locality just mentioned, where it would seem it was not indigenous. Some years ago there were many large trees of this Poplar at Hoboken, on the road leading to Hackensack, but few of them are now left. I have not been able to ascertain their origin. There can be little doubt of the tree being a mere variety of *P. nigra*; and according to Mr. Loudon (*l. c.*), Michaux, in 1840, was of this opinion also. It is probably not a native of North America.

6. POPULUS BALSAMIFERA, *Linn.* *Balsam Poplar. Tackamahac.*

Branches terete; leaves ovate, acuminate, serrate, smooth on both sides, pale and reticulate underneath; bracts of the ament dilated, laciniately fimbriate, slightly hairy; stamens very numerous; ovary ovoid-globose; lobes of the stigma very large and dilated.—*Linn. sp.* (ed. 2.) 2. *p.* 1464; *Michx. fl.* 2. *p.* 244; *Michx. f. sylv.* 2. *t.* 98; *Pursh, fl.* 2. *p.* 619; *Beck, bot. p.* 322; *Hook. fl. Bor.-Am.* 2. *p.* 154.

Stem 30 – 80 feet high and 1 – 2 feet or more in diameter. Leaves about 3 inches long, usually more or less ovate, of a yellowish color when young, but bright green above in the adult state; the serratures small and rather sharp: petiole nearly smooth, the upper half slightly compressed, the lower terete. Sterile aments 2 – 3 inches long; the bracts nearly orbicular, light brown, irregularly cut into numerous narrow segments: stamens 40 – 50: anthers deep purple. Fertile aments finally 4 – 6 inches long; the rachis smooth: ovaries on very short pedicels, smooth.

Banks of rivers and borders of swamps. Oneida county (*Dr. Knieskern*); near Niagara (*Dr. Kennicutt*); shores of Lake Champlain (*Michaux*). The localities here given are probably the southern limits of this tree. To the north it is found as far as Great Slave Lake. On the Northwest Coast, according to the late Mr. Douglas, it sometimes attains the height of 140 feet, with a trunk from 9 – 20 feet in diameter. The buds in the spring are large, yellow, and covered with a fragrant varnish.

7. Populus candicans, *Ait.* *Heart-leaved Balsam Poplar.*

Branches terete; leaves cordate, acuminate, serrate, whitish and reticulated underneath; petiole mostly hairy; ovary ovoid-globose; lobes of the stigma large and dilated. — *Ait. Kew.* (ed. 1.) 3. *p.* 406; *Michx. sylv.* 2. *t.* 98. *fig.* 2; *Pursh fl.* 2. *p.* 618; *Bigel. fl. Bost. p.* 370.

Stem 40 – 50 feet high and 12 – 18 inches in diameter; the bark smooth and greenish: branches spreading and somewhat fastigiate. Leaves 4 – 6 inches long and of nearly the same breadth, yellowish when young, but finally deep green above and whitish underneath: petiole slender, a little compressed above. Sterile aments not seen. Fertile aments finally 6 inches or more in length; the rachis and very short pedicels quite smooth.

This poplar is said by Muhlenberg to grow in New-York, but I have not found it indigenous within our limits. It has been seen, however, by Dr. Robbins and Mr. Oakes, in various parts of Vermont, bordering on this State, and it doubtless grows on the western shores of Lake Champlain. It is nearly allied to the common Balsam Poplar, but differs in its cordate much larger leaves. The buds in both species are covered with an odoriferous adhesive resin.

Order CIII. BALSAMIFLUÆ. *Blume.* The Sweet-gum Tribe.

Flowers monœcious, destitute of calyx and corolla, in aments which are furnished with a caducous 4-leaved involucre. Sterile fl. in conical, sometimes compound aments. Stamens numerous. Fertile fl. in globose aments: ovaries numerous, surrounded by small scales which finally become conslidated, 2-celled, many-ovuled: styles 2, subulate or thick, stigmatose on one side. Capsules immersed in the united scales, and forming a kind of globose strobile, 2-celled, 2-beaked, opening between the beaks. Seeds mostly abortive; the few fertile with a membranaceous margin. Albumen thin. Embryo straight, with foliaceous cotyledons. — Trees, with alternate usually palmately lobed leaves and deciduous stipules.

1. LIQUIDAMBAR. *Linn.; Endl. gen.* 1902. *SWEET-GUM.*

[From the Latin, *liquidus*, fluid, and *ambar*, amber; in allusion to the terebinthine fluid that exudes from the tree.]

Character same as that of the order.

1. Liquidambar styraciflua, *Linn.* *Common Sweet-gum. Bilsted.*

Leaves with acuminate serrate lobes; axils of the primary veins villous.—*Linn. sp.* (ed. 2.) 2. *p.* 418; *Michx. fl.* 2. *p.* 202; *Michx. f. sylv.* 1. *t.* 62; *Pursh, fl.* 2. *p.* 635; *Nutt. gen.*

2. *p.* 219 ; *Ell. sk.* 2. *p.* 621 ; *Torr. compend. p.* 357 ; *Beck, bot. p.* 327. L. peregrina, *sp. pl.* (ed. 1.) 2. *p.* 999. L. styraciflua, *Linn. sp.* (ed. 2.) 2. *p.* 1418.

A large tree, frequently attaining the height 60 – 70 feet and 1 – 2 feet in diameter (in the Southern States much greater) ; the smaller branches often furnished with thick corky ridges. Leaves 3 – 5 inches in diameter, dark green and shining, usually with 5 – 7 large unequal spreading lobes, which are very acute and finely serrate, often sparingly toothed. Sterile aments erect, consisting of several small globular heads which are aggregated in a conical cluster. Fertile aments near the base of the sterile, pedunculate and finally pendulous ; in fruit about an inch in diameter, forming a ligneous prickly strobile of a brownish color. Capsules closely connected in a globose head, each containing a very few winged fertile seeds, and a great number of infertile ones resembling coarse sawdust.

Moist woods and borders of swamps : common in the southern part of the State ; not often seen north or west of Albany. *Fl.* April. *Fr.* September. The wood of this ornamental tree is fine-grained, and is sometimes employed for cabinet work ; but it is apt to warp. Exposed to moisture, it soon decays. In New-York, it is chiefly used for making coffins. The leaves are fragrant when bruised ; and when touched by the frosts of autumn, assume a fine purplish red color. I believe it is only in the Southern States that the tree exudes the aromatic turpentine from which it derives its name. This matter contains no benzoic acid, and is therefore not a balsam.

ORDER CIV. PLATANACEÆ. *Lestib.* THE PLANE-TREE TRIBE.

Flowers monœcious, in globose pedunculate aments, destitute of floral envelopes. STERILE FL. Stamens numerous, mixed with clavate scales, densely crowded. FERTILE FL. Ovaries numerous, crowded, hairy at the base, mixed with clavate scales, one-celled, with one or two ovules in each : styles subulate : stigma small. Fruit a small coriaceous one-seeded nut, with pappus-like hairs at the base. Seeds albuminous. — Large trees, with alternate palmately veined and lobed leaves with sheathing stipules. Buds concealed within the swollen base of the petioles.

1. PLATANUS. *Linn.; Endl. gen.* 1901. *PLANE TREE. BUTTON-WOOD.*

[So named from the Greek, *platys*, broad ; in allusion to the ample shade of its foliage.]

Character same as that of the order.

1. PLATANUS OCCIDENTALIS, *Linn.* *Button-wood. Sycamore.*

Leaves angularly lobed or obscurely palmate, sinuate-toothed, pubescent underneath ;

branches whitish; fertile heads solitary.—*Linn. sp.* 2. *p.* 999; *Michx. fl.* 2. *p.* 163; *Michx. sylv.* 1. *t.* 63; *Pursh, fl* 2. *p.* 635; *Ell. sk.* 2. *p.* 620; *Bigel. fl. Bost. p.* 358; *Beck, bot. p.* 327; *Darlingt. fl. Cest. p.* 542; *Loud. enc. tr. & shr. p.* 931.

A very large tree, often 60 – 80 feet high and 2 – 5 feet or more in diameter, with thick spreading branches. The bark separates in thin hard plates, leaving a whitish surface underneath. Leaves roundish in the outline, longer than broad, 4 – 8 inches wide, truncate or cordate at the base, clothed with a deciduous pubescence: teeth acuminate: petioles 1 – 3 inches long, pubescent when young, smoothish when old. Stipules sheathing, with a spreading leafy toothed border. Sterile heads in small globose heads, deciduous. Fertile heads consisting of numerous naked pistils aggregated on a globose receptacle: ovary oblong, tapering into a long subulate style. Fruiting ament about an inch in diameter, forming a compact ball, which hangs on a tough slender peduncle 3 – 4 inches long, and remains through the winter. Nuts slender, clavate, tapering to the base, and clothed with numerous long tawny hairs.

Banks of rivers; common in nearly all parts of the State. *Fl.* May. *Fr.* September. The wood of this well known shade tree is little used either for timber or fuel. It is liable to warp, and soon decays in moist places. It is said, that many years ago, a Button-wood tree grew in the western part of this State (I think on the Genesee river), the trunk of which was more than fifteen feet in diameter.

Order CV. URTICACEÆ. *DC.* The Nettle Tribe.

Flowers monœcious, diœcious or polygamous, sometimes collected in aments or fleshy heads, furnished with a regular calyx, but destitute of corolla. Stamens definite: anthers curved inward in æstivation. Ovary free from the calyx, simple, one-celled with a solitary ovule, or very rarely 2-celled and an ovule in each cell. Fruit an achenium or utricle, often enclosed in a fleshy or baccate calyx.—Trees or shrubs with a milky juice, or herbs with a watery juice, often stinging. Leaves often stipulate.

Suborder I. MOREÆ. *Endl.* The Mulberry Tribe.

Staminate and pistillate flowers in separate spikes or aments, which finally become succulent, forming a compound fruit; or intermixed and enclosed in the same hollow and fleshy receptacle. Seeds albuminous.—Mostly trees or shrubs with a milky juice.

1. MORUS. *Tourn.; Endl. gen.* 1856. *MULBERRY.*

[From the Greek, *morea*; the mulberry.]

Flowers in spikes, usually monœcious. Staminate spikes loose. Calyx 4-parted; the segments ovate, concave. Stamens 4. Fertile spikes dense. Calyx 4-parted, becoming baccate. Ovary one-celled, or 2-celled with one of the cells smaller: ovule suspended: styles 2. Achenium ovate, compressed, covered by the succulent calyx. — Trees, with alternate stipular leaves.

1. MORUS RUBRA, *Linn.* *Red Mulberry.*

Leaves cordate-ovate (on the young sprouts more or less palmately lobed), serrate, rough above, pubescent underneath; flowers mostly diœcious; fruit dark purple.—*Linn. sp.* 2. *p.* 986; *Michx. fl.* 2. *p.* 179; *Michx. sylv.* 2. *t.* 116; *Pursh fl.* 2. *p.* 639; *Ell. sk.* 2. *p.* 575; *Torr. compend. p.* 352; *Beck, bot. p.* 316; *Darlingt. fl. Cest. p.* 524; *Loud. enc. tr. & shr. p.* . . .

A tree 15 – 25 feet high and 4 – 8 inches in diameter, with spreading branches. Leaves 3 – 7 inches long, thin, more or less cordate at the base, acuminate, undivided or variously lobed: petioles ½ – 1½ inch long. Stipules linear, membranaceous, caducous. Flowers greenish, in axillary pedunculate spikes: sterile spike cylindrical, an inch or more in length, pendulous; pistillate spike thick, becoming in maturity an oblong dark purple juicy fruit of a pleasant sweetish taste.

Woods, in rich soil; frequent in the valley of the Hudson, but rare in the western counties. *Fl.* May. *Fr.* July. The wood is of a yellowish tinge, fine grained, and though light, is very durable. It is a small tree, however, in the State of New-York, and its wood is not much used.

2. MORUS ALBA, *Linn.* *White Mulberry.*

Leaves obliquely cordate-ovate or somewhat lobed, acute, serrate, smooth and shining; fruit whitish.—*Linn. sp.* 2. *p.* 986; *Ell. sk.* 2. *p.* 574; *Beck, bot. p.* 316; *Darlingt. fl. Cest. p.* 524.

A tree 20 – 30 feet high and 6 – 12 inches in diameter, much branched. Leaves about 3 inches long, with a short acumination, crenately serrate, sometimes a little lobed. Fruit shorter than in the preceding species, yellowish white or rarely purple, of a sweetish and somewhat nauseous taste.

About habitations, and borders of old fields; frequent in many places, having been introduced many years ago as food for silkworms. Other species of mulberry have superseded it for this purpose. *Fl.* May. *Fr.* July.

SUBORDER II. URTICEÆ. *Endl.* THE NETTLE TRIBE proper.

Calyx membranaceous, 4 – 5- (rarely 2 – 3-) sepalled : sepals free or partly united. Stamens equal in number to the sepals. Style single or none. Embryo straight, in fleshy albumen. Herbs (often shrubs or trees in warm countries) with watery juice, often furnished with stinging hairs. Flowers mostly paniculate or spicate.

2. URTICA. *Tourn.; Endl. gen.* 1879. *NETTLE.*

[From the Latin, *uro*, to burn; from its stinging property.]

Flowers monœcious or dicœcious. STAM. FL. Calyx 4- (rarely 5-) sepalled; the sepals roundish, finally spreading. Stamens as many as the sepals. Rudimentary ovary cup-shaped. PIST. FL. Calyx mostly of 4 sepals; the 2 exterior sepals smaller, or sometimes wanting. Ovary one-celled, with a single erect orthotropous ovule at the base. Achenium oblong, more or less compressed.—Herbs, or rarely undershrubs, with stinging hairs. Leaves alternate or opposite, incisely serrate. Flowers in panicles, or in axillary racemes or spikes, sometimes capitate.

§ 1. URTICA proper, Gaud. *Calyx of the sterile and fertile flowers 4-parted, foliaceous: stamens 4: stigma pencillate: achenium lenticularly compressed.*

* *Leaves opposite.*

1. URTICA DIOICA, *Linn.* *Common Stinging Nettle.*

Stem and leaves hispid; leaves ovate, acuminate, mostly cordate at the base; clusters much branched; flowers usually dicœcious.—*Linn. sp.* 2. *p.* 984; *Michx. fl.* 2. *p.* 179; *Eng. bot. t.* 1750; *Pursh, fl.* 1. *p.* 113; *Ell. sk.* 2. *p.* 571; *Bigel. fl. Bost. p.* 341; *Torr. compend. p.* 351; *Beck, bot. p.* 314; *Darlingt. fl. Cest.*

Perennial. Stem 2 – 3 feet high, simple or branching, erect, obtusely 4-angled, hispid with stinging hairs. Leaves 2 – 4 inches long and 1 – 1½ inch wide. Racemes in pairs, axillary, branching, spreading. Flowers minute, green. Calyx of the fertile flower 4-sepalled, the two exterior sepals very small.

Road-sides, and waste places: rather common. *Fl.* July – August. Introduced from Europe. A troublesome weed, which often produces painful effects when incautiously touched. The bark of the stems (as in most plants of this tribe) affords a tough fibre, like hemp, and the root boiled with alum dyes yellow.

2. URTICA URENS, *Linn.* *Small Stinging Nettle.*

Leaves opposite, varying from elliptical to roundish-ovate, somewhat 5-nerved, coarsely and acutely dentate-serrate ; clusters of flowers nearly simple, axillary, shorter than the leaves. —*Linn. sp.* 2. *p.* 284 ; *Engl. bot. t.* 1236 ; *Pursh, fl.* 1. *p.* 113 ; *Ell. sk.* 2. *p.* 570 ; *Beck, bot. p.* 314.

Annual. Stem 8 – 12 inches high, stinging, erect. Leaves 1 – 2 inches long, obtuse or somewhat cordate at the base ; the serratures coarse and spreading. Flowers mostly dicœcious, in short dense clusters. Ovary ovate : style nearly terminal.

Waste grounds and sandy fields. Long Island ; near Troy (*Dr. Wright*). *Fl.* July. *Fr.* September. Introduced from Europe.

§ 2. LAPORTEA, Gaud. *Calyx of the sterile flowers 5-parted : stamens 5. Calyx of the fertile flowers 2-sepalled, foliaceous in fruit : stigma subulate, elongated : achenium obliquely lenticular-ovate.*

** *Leaves alternate.*

3. URTICA CANADENSIS, *Linn.* *Canadian Nettle.*

Hispid and stinging ; leaves ovate, acuminate, serrate ; panicles axillary, loosely and divaricately branched, the lower ones sterile, upper ones fertile. — *Linn. sp.* 2. *p.* 985 ; *Michx. fl.* 2. *p.* 178 ; *Pursh, fl.* 1. *p.* 114 ; *Ell. sk.* 2. *p.* 573 ; *Bigel. fl. Bost. p.* 341 ; *Beck, bot. p.* 314 ; *Darlingt. fl. Cest. p.* 523 ; *Hook. fl. Bor.-Am.* 2. *p.* 142. U. divaricata, *Pursh, l. c. p.* 113 ; *Beck, bot. p.* 314. U. Whitlowi, *Muhl. in Green's cat. pl. N. York.*

Perennial. Stem 2 – 5 feet high, erect, branching. Leaves 3 – 6 inches or more in length and 2 – 4 inches wide, thin, with coarse acute serratures, sometimes cordate, sprinkled with hairs. Panicles longer than the petioles ; the lower ones mostly staminate : upper ones large and widely spreading, with very hispid branches. STERILE FL. Calyx 5-parted ; the segments roundish, concave. Stamens short, incurved. Rudimentary ovary hemispherical. FERTILE FL. Calyx of 2 oblong concave sepals. Achenium much compressed, smooth, very oblique, finally refracted on the short broadly winged pedicel : persistent style lateral. Seed ovate-lenticular. Embryo large, in the midst of thin fleshy albumen : cotyledon orbicular, flattish.

Moist shady soils, particularly along rivers. *Fl.* July. *Fr.* September. This (like several other species of the genus) affords a strong fibre like hemp, and has been proposed to be used as a substitute for that article, but it is hardly worth the trouble of cultivation.

3. ADIKE. *Raf. new fl. N. Am. p.* 63. *RICHWEED.*

ADICEA, *Raf.* Species of URTICA, *auct.*

["An ancient Greek name of some nettles." RAF.]

Flowers dioecious, or somewhat monoecious. Calyx 3- (rarely 4-) sepalled: sepals nearly equal, oblong or lanceolate. STERILE FL. Stamens 3. Rudimentary ovary wanting. FERT. FL. Sepals with a petaloid cucullate scale at the base of each inside, membranaceous in fruit. Ovary ovate, compressed: stigma minute, capitate, sessile. Achenium minutely papillose, straight.—Smooth annual herbs, with opposite ovate 3-nerved leaves, and the flowers in axillary clusters.

1. ADIKE PUMILA, *Raf.* (Plate CXXII.) *Richweed. Coolweed.*

Raf. new fl. N. Am. p. 63. Urtica pumila, *Linn. sp.* 2. *p.* 984; *Michx. fl.* 2. *p.* 178; *Pursh, fl.* 1. *p.* 112; *Ell. sk.* 2. *p.* 569; *Bigel. fl. Bost. p.* 341; *Beck, bot. p.* 314; *Darlingt. fl. Cest. p.* 523. Adike glaberrima, lanceolata & rhomboide, *Raf. l. c.* Adicea pumila, trinerva, etc., *Raf. in herb. Torr.*

Stem 3 – 18 inches high, simple or branching from the base, smooth, succulent and translucent, obtusely 4-angled. Leaves 1 – 3 inches long, varying from broadly ovate to ovate-lanceolate, acuminate, crenate-serrate. Smooth, or only sprinkled with short appressed hairs: petiole 1 – 2 inches long. Flowers very small, greenish, in axillary corymbose clusters which are shorter than the petioles; the sterile and fertile often intermixed. Sepals of the sterile flower oblong, concave; of the fertile, lanceolate, erect; the scale on the inside of each oblong, finally involute. Achenium roughened with minute dots, acutish, tipped with the minute stigma.

Moist shady places, particularly in cool ravines: extremely variable in size. Common. *Fl.* June – July. *Fr.* September. This species differs so much from the common stinging nettles, that Rafinesque long ago proposed it as a separate genus. In some places it is known by the name of *Clearweed*, from the semitransparency of its stems.

4. BŒHMERIA. *Jacq. Amer. t.* 157. *FALSE NETTLE.*

[Named after GEORGE RUDOLPH BŒHMER, a German botanist.]

Flowers monœcious or dioecious, minute. STERILE. Calyx 4- (sometimes 5-) parted. Stamens 4, rarely 5. Rudimentary ovary roundish, minute. FERTILE. Calyx tubular-ventricose, surrounding the ovary, the orifice somewhat 4-toothed or entire. Ovary ovate, compressed: style subulate: stigma unilateral. Achenium ovate, pointed with the subulate style, covered with the membranaceous or baccate calyx.—Herbs, or (in tropical climates) shrubby plants, with opposite or alternate leaves and flowers in axillary glomerate elongated spikes.

1. BŒHMERIA CYLINDRICA, *Willd.* *False Nettle.*

Herbaceous; leaves opposite, ovate-oblong or ovate-lanceolate, acuminate, serrate-toothed, 3-nerved, smoothish; sterile spikes interrupted, the fertile mostly continuous, cylindrical.—*Willd sp.* 4. *p.* 340; *Pursh, fl.* 1. *p.* 112; *Ell. sk.* 2. *p.* 668; *Bigel. fl. Bost. p.* 342; *Beck, bot. p.* 316; *Darlingt. fl. Cest. p.* 522; *Hook. fl. Bor.-Am.* 2. *p.* 142. Urtica cylindrica, *Linn. sp.* 2. *p.* 984; *Michx. fl.* 2. *p.* 179.

Perennial. Stem about 2 feet high, simple, obtusely 4-angled, smoothish or slightly pubescent, often of a reddish tinge. Leaves 2 – 4 inches long, rarely alternate, usually of a thin texture, sprinkled with a few short hairs: petiole varying from less than half an inch to 2 inches or more in length (being short in dry open situations). Spikes slender, often leafy at the summit, often dicœcious. Flowers sessile or nearly so, each with a small ovate bract at the base; the fertile apparently naked, but the calyx closely invests the ovary to the summit. Fructiferous calyx somewhat hispid, and rather fleshy. Achenium ovoid, compressed, crustaceous.

Moist grounds, usually in shady places: frequent. *Fl.* July – August. *Fr.* September. *B. cylindrica*, Muhl., seems to be scarcely distinct from this species.

5. PARIETARIA. *Tourn.; Endl. gen.* 1885. *PELLITORY.*

[From the Latin, *paries*, a wall; in allusion to the place of growth.]

Flowers monœcious or polygamous. STERILE. Calyx 4-sepalled. Stamens 4. Rudimentary ovary stipitate; the ovule abortive. FERTILE. Calyx ventricose-tubular or campanulate, 4-toothed or 4-cleft; the segments nearly equal, or two opposite ones smaller. Ovary ovate: style very short, or none: stigma capitate-pencilled. Achenium more or less covered by the dry or slightly fleshy calyx. — Herbs or undershrubs, destitute of stinging hairs. Flowers small, greenish, in axillary involucrate fascicles or cymules, sometimes perfect.

1. PARIETARIA PENNSYLVANICA, *Muhl.* *Pennsylvanian Pellitory.*

Leaves alternate, oblong-lanceolate, veiny, opake, dotted; involucral leaves longer than the flowers; calyx campanulate, 4-parted.—*Muhl. in Willd. sp.* 4. *p.* 955; *Pursh, fl.* 1. *p.* 114; *Ell. sk.* 2. *p.* 575; *Torr. compend. p.* 352; *Beck, bot. p.* 315; *Darlingt. fl. Cest. p.* 113. P. Americana, *Muhl. cat. p.* 95.

Annual. Stem about a span high, weak, simple or sparingly branched near the base, pubescent. Leaves 1 – 2 inches long, tapering to each end, very thin, slightly hairy, and roughened with minute points, ciliate on the margin. Flowers mostly perfect, in small axillary clusters, with linear-lanceolate leafy hispid bracts at the base. Calyx campanulate, cleft to the middle into four acute 3-nerved segments, minutely hispid. Stigma sessile, hairy. Achenium oval, a little compressed, smooth and shining, light brown.

Shady rocky banks, particularly in the western and northern parts of the State. *Fl.* May – July. *Fr.* September. A small homely weed-like plant.

SUBORDER III. CANNABINEÆ. *Endl.* THE HEMP TRIBE.

Flowers dioecious. STERILE. Calyx 5-sepalled, membranaceous. Stamens 5. FERTILE. Calyx monosepalous, dry and membranaceous, embracing or enclosing the ovary. Styles 2. Embryo curved, without albumen.—Herbs with watery juice : the sterile flowers racemose or paniculate ; the fertile glomerate, or imbricated with sepals, forming an ament-like spike.

6. CANNABIS. *Linn. ; Endl. gen.* 1890. *HEMP.*

[An ancient name of obscure etymology.]

STERILE FL. Calyx equally 5-sepalled. FERTILE FL. Calyx oblong, acuminate, convolute ; the base ventricose and including the ovary. Caryopsis 2-valved.—An erect, annual herb, with digitate leaves : the sterile flowers in loose axillary pedunculate clusters ; the fertile axillary and sessile.

1. CANNABIS SATIVA, *Linn.* *Common Hemp.*

Linn. sp. 2. *p.* 1027 ; *Pursh, fl.* 1. *p.* 199 ; *Beck, bot. p.* 315 ; *Darlingt. fl. Cest. p.* 564.

Stem 5 – 10 feet high, roughly pubescent. Leaves petiolate, digitately parted into 5 – 7 lanceolate serrate divisions. Sterile flowers in numerous axillary clusters, which together form a large panicle. Fertile flowers mostly by pairs. Calyx greenish. Styles long, subulate. Caryopsis ovoid, smooth, surrounded by the persistent calyx.

Waste places and along fences : scarcely naturalized. *Fl.* June. *Fr.* August. This well known plant is cultivated throughout the world, for the sake of its tough fibre. A variety occurs in India, which affords a valuable narcotic.

7. HUMULUS. *Linn. ; Endl. gen.* 1891. *HOP.*

[From *humus*, moist earth ; because it prefers damp soils.]

STERILE FL. racemose or paniculate. Calyx 5-sepalled. Stamens 5. FERTILE FL. in aments. Bracts foliaceous, imbricated, in several rows, 2-flowered. Calyx 1-sepalled, embracing the ovary, and enlarging in fruit. Styles long and spreading. Achenia invested with the enlarged calyx, and forming a membranaceous strobile.—A rough twining perennial herb, with mostly opposite cordate 3 – 5-lobed leaves and ovate stipules.

1. HUMULUS LUPULUS, *Linn.* *Hop.*

Linn. sp. 2. *p.* 1028 ; *Michx. fl.* 2. *p.* 230 ; *Pursh fl.* 1. *p.* 199 ; *Nutt. gen.* 2. *p.* 237 ; *Ell. sk.* 2. *p.* 695 ; *Bigel. fl. Bost. p.* 367, and *med. bot. t.* 60 ; *Torr. compend. p.* 373 ; *Beck, bot. p.* 315 ; *Darlingt. fl. Cest. p.* 563.

Stems twining with the sun, usually several from one root, very rough downward with minute prickles. Leaves 3 – 5 inches long, with the lobes acuminate and serrate, very rough. Stipules between the petioles, reflexed. Sterile flowers in oblong panicles from short axillary branches. Sepals oblong, obtuse. Fertile flowers in oblong aments. Bracts ovate, acute. Calyx-scales in fruit covered with orange-colored resinous grains. Strobile in maturity 1 – 2 inches long, and about an inch in diameter.

Borders of woods, hedges, etc. : not rare, and apparently native. *Fl.* July. *Fr.* September. The peculiar principle of the hop resides in the yellow granular matter of the strobiles, and is known by the name of *lupulin.* It is employed in medicine as an anodyne.

CLASS II. GYMNOSPERMOUS PLANTS.

Stem similar to that of exogenous plants. Ovules not enclosed in an ovary; the carpel being either altogether wanting, or represented by an open scale. Embryo with two opposite, or several whorled cotyledons.

ORDER CV. CONIFERÆ. *Juss.* THE PINE TRIBE.

Flowers monœcious or diœcious, commonly amentaceous, destitute of calyx and corolla. Sterile flowers consisting of one or more (often monadelphous) stamens, arranged on a rachis so as to form a loose ament or spike. Ovules seated on scales (which may be regarded as flat and open carpels), or in an open disk. — Trees or shrubs, with branching trunks, abounding in resinous juice; the wood mostly destitute of proper spiral vessels, and consisting of fibres which are marked with circular disks. Leaves scattered, fascicled, sometimes opposite, usually rigid and needle-shaped, entire.

SUBORDER I. ABIETINEÆ. *L. C. Rich.* THE PINE TRIBE proper.

Flowers usually monœcious. Fertile aments formed of imbricated carpellary scales, each with a pair of inverted ovules adherent to their base. Scales subtended by bracts. Fruit a strobile or cone, the scales of which are woody or coriaceous, and usually persistent. Integument of the seed coriaceous or woody, often produced into a membranaceous wing. Embryo in the axis of fleshy or oily albumen, with 2 – 15 cotyledons.

1. PINUS. *Linn.; Endl. gen.* 1795. PINE.

[Said to be derived from the Celtic word *pin*, or *pen*, signifying a *crag* or rocky mountain, where many of the species delight to grow.]

STERILE FL. in racemose aments. Stamens numerous, with short filaments: anthers 2-celled; the connective scale-like. FERTILE FL. in a more or less conical or cylindrical ament; the scales usually adnate to the bracts. Cone formed of scales which are excavated at the base for the reception of the seeds, often mucronate below the tip. — Mostly trees.

* PINUS proper, Link. *Sterile aments aggregated in a terminal cluster. Anther-cells opening longitudinally. Scales of the cone thickened at the top, persistent, not the bracts. Leaves evergreen, linear, 2, 3 or 5 in a fascicle which is surrounded at the base with a short scarious sheath.*

1. PINUS RESINOSA, *Soland.* *Red Pine.*

Leaves in pairs, shorter than the cones; cones ovate-conical, rounded at the base; scales dilated in the middle, unarmed.—*Soland. in Ait. Kew.* (ed. 1.) 3. *p.* 367; *Lamb. Pin. p.* 20. *t.* 14; *Pursh, fl.* 2. *p.* 642; *Torr. compend. p.* 359; *Beck, bot. p.* 339; *Hook. fl. Bor.-Am.* 2. *p.* 161; *Loud. enc. tr. & shr. p.* 972. P. rubra, *Michx. f. sylv.* 2. *t.* 134.

A tree 70 – 80 feet high, with a trunk 2 feet in diameter, and of nearly uniform diameter for two-thirds of its length; the bark of a brighter red than in any other Pine of the United States. Leaves dark green, 5 – 6 inches long. Cones about 2 inches long, abruptly pointed (*Michx. f.*).

Dry soils. Helderberg mountain (*Dr. L. C. Beck*). Yates county, (*Dr. Sartwell*). I have not found this pine within the limits of our State. According to Michaux the wood is compact, with a fine grain, and is heavy in consequence of the resinous matter with which it is impregnated. It is highly esteemed for strength and durability, and is often employed for the decks and masts of vessels.

2. PINUS RIGIDA, *Mill.* *Pitch Pine.*

Leaves in threes; cones ovoid, mostly clustered in threes and fours, much shorter than the leaves; the scales terminated by a short acute reflexed point.—*Mill. dict. no.* 10; *Michx. f. sylv.* 2. *t.* 144; *Lamb. Pin. t.* 16. 17; *Pursh, fl.* 2. *p.* 643; *Ell. sk.* 2. *p.* 634; *Bigel. fl. Bost. p.* 359; *Beck, bot. p.* 339; *Darlingt. fl. Cest. p.* 519; *Loud. enc. tr. & shr. p.* 977.

A tree 30 – 50 feet high and a foot or more in diameter, with numerous branches; the bark thick, fissured and blackish. Leaves 2 – 4 inches long; the sheath short and pale brown. Sterile aments ovoid-oblong, clustered. Crest of the anther dilated, roundish. Cones 2 – 4 inches long: scales cuneate-oblong, with a somewhat pyramidal summit, and a rigid spreading or reflexed point.

Light sandy soils, sometimes in wet places : abundant in many parts of the State, as on Long Island, where it covers extensive tracts of land ; between Albany and Schenectady ; and the Pine plains of Rome. *Fl.* May. *Fr.* September. In dry situations the wood abounds in turpentine. It is not much valued for lumber, on account of its numerous knots. Its chief use is for fuel ; a large part of the *pine wood* sold in our cities, being of this species.

3. PINUS STROBUS, *Linn.* *White Pine. Weymouth Pine.*

Leaves in fives, very slender, glaucous, scarcely sheathed at the base ; cones much longer than the leaves, cylindrical-oblong, pendulous ; scales loose, flattish, without spines. — *Linn. sp.* 2. *p.* 1001 ; *Michx. fl.* 2. *p.* 205 ; *Michx. f. sylv.* 2. *t.* 145 ; *Lamb. Pin. t.* 32 ; *Bigel. fl. Bost. p.* 359 ; *Ell. sk.* 2. *p.* 638 ; *Beck, bot. p.* 339 ; *Darlingt. fl. Cest. p.* 549 ; *Hook. fl. Bor.-Am.* 2. *p.* 161.

A noble tree, often attaining the height of 130 feet. The trunk is from 1 – 3 feet in diameter,* straight and unbranched for two-thirds of its height, and usually with short and somewhat verticillate branches. In good soil it spreads more at the summit, but does not grow so tall. The bark, in trees of only moderate size, is smooth, but on old trunks it is cracked and furrowed. The leaves are sharply triangular, 3 – 5 inches long, and more slender than in any other North American pine. Sterile aments 5 or 6 together, ovoid, about one-third of an inch long. The cones are 4 – 6 inches long and about an inch in diameter before the scales are unloosed, nearly cylindrical, and a little curved : scales broadly obovate, thinnish, rather loosely imbricated, slightly thickened at the summit. Seed (including the wing) about three fourths of an inch long.

In almost all soils, but preferring cool damp mountainous places. *Fl.* May. *Fr.* September. The White Pine is found in most parts of the State, but our chief extensive forests of this noble and most valuable tree are in four places : *First*, on the head waters of the Hudson, and on the rivers which empty into the St. Lawrence ; *secondly*, on the Salmon and Black rivers, which empty into Lake Ontario ; *thirdly*, on the head waters of the Delaware and Susquehannah ; *fourthly*, on the head waters of the Allegany and Genesee. These forests are rapidly disappearing under the axe, and it is thought will be nearly destroyed in about twenty or thirty years. A late writer states that 650,000,000 of feet of pine lumber are annually obtained from the State of New-York, exclusive of a large quantity that is sent down the St. Lawrence. To supply this large demand, the timber of no less than 65,000 acres must be taken away every year.

* *Michaux f.* states that he measured two trunks that were felled ; one of which was 151 feet long, and 51 inches in diameter ; the other 142 feet long and 44 inches in diameter. He also saw a stump in Maine, that was more than 6 feet in diameter. Belknap, in his History of New-Hampshire, notices a White Pine that was 7 feet in diameter.

4. PINUS MITIS, *Michx.* *Yellow Pine.*

Leaves elongated, slender, usually in pairs, but often in threes, channelled, the sheaths long; cones ovoid-conical (small); scales slightly prominent, with a small slender mucro pointing outward. — *Michx. fl.* 2. *p.* 204; *Michx. f. sylv.* 2. *t.* 137; *Loud. enc. tr. & shr. p.* 974. P. variabilis, *Lamb. Pin. t.* 14; *Pursh, fl.* 2. *p.* 643; *Ell. sk.* 2. *p.* 633; *Beck, bot. p.* 339.

A tree from 40 – 60 feet high and 12 – 18 inches in diameter, with a regular pyramidal head. Leaves $2\frac{1}{2}$ – 5 inches long, dark green. Cones about 2 inches long; the prickle at the extremity of the scale very slender.

Sandy soils. On the Hudson, near Albany (*Michaux f.*). I have not detected this species within the limits of the State, but it is very abundant in New-Jersey. The timber is fine grained, only moderately resinous, and durable. It is extensively employed in the United States, particularly for the flooring of houses; and great quantities of it are exported to Europe and other countries.

** ABIES, Tourn. *Sterile aments axillary, aggregated towards the extremity of the branches. Cells of the anthers transversely lacerated. Cones scattered, erect. Bracts persistent. Scales somewhat ligneous, at length separating from the axis. Leaves evergreen, solitary, distinctly* 2*-ranked* (PICEA, D. Don).

5. PINUS BALSAMEA, *Linn.* *Balm of Gilead Fir. Balsam Fir.*

Leaves silvery underneath, emarginate or entire, somewhat recurved and spreading; cones cylindrical, erect, violet-colored; bracts short, obovate, serrulate and conspicuously mucronate. — *Linn. sp.* 2. *p.* 1003; *Lamb. Pin. t.* 41. *f.* 2; *Pursh, fl.* 2. *p.* 639; *Ell. sk.* 2. *p.* 639; *Beck, bot. p.* 340; *Hook. fl. Bor.-Am.* 2. *p.* 163. Pinus-Abies balsamea, *Marsh. arb. Amer. p.* 102. A. balsamifera, *Michx. fl.* 2. *p.* 207; *Michx. f. sylv.* 2. *t.* 150. Picea balsamea, *Loud. enc. tr. & shr. p.* 1044.

A beautiful tree, which is seldom more than 20 – 40 feet high and 6 – 12 inches in diameter, but sometimes attaining a height of 50 – 60 feet with a trunk 18 inches in diameter. The wood is light colored, with a yellowish heart. Leaves about 6 – 8 lines long and a line and a half wide, bright green above and silvery white underneath. Cones 3 – 4 inches long and about an inch in diameter; the scales very broad and rounded. Bracts slightly projecting, erect, with a slender mucro. Seed small, surrounded by a broad obovate wing.

On the Catskill mountains, and in the northern counties, particularly among the Essex mountains. Oriskany swamp (*Dr. Knieskern*). *Fl.* June. In the Hudson river counties, I have not found this species south of Catskill, and it there attains but a moderate stature. In the vallies of the Essex mountains, however, it becomes a large tree; while on the highest summits of these mountains it dwindles to the height of only a few inches. The wood is seldom employed for lumber; but the turpentine, which is obtained by puncturing the blisters of the bark, is used medicinally under the name of *Canada balsam*: it is also used for optical

purposes. As an ornamental evergreen, the Balsam Fir has been long cultivated, both in this country and in Europe. The *Pinus Fraseri* of Pursh, which is nearly allied to this species, and is by many botanists regarded as only a variety of it, grows in Vermont, and probably also on the mountains of Essex county, but I did not observe it when I explored that region.

*** PICEA, Link. *Sterile aments scattered towards the extremity of the branches. Cells of the anthers opening longitudinally. Cones scattered, pendant. Bracts very small at maturity: scales not thickened at the tip, ligneous, smooth, persistent. Leaves evergreen, solitary, more or less 2-ranked.*

6. PINUS CANADENSIS, *Linn.* *Hemlock Spruce.*

Leaves distichous, solitary, flat, obtuse, minutely denticulate towards the apex; cones elliptical-ovoid, a little longer than the leaves.—*Linn. sp.* (ed. 2.) 2. *p.* 1421; *Lamb. Pin. t.* 45; *Pursh, fl.* 2. *p.* 640; *Ell. sk.* 2. *p.* 639; *Bigel. fl. Bost. p.* 360; *Beck, bot. p.* 340; *Darlingt. fl. Cest. p.* 548. Pinus-Abies Canadensis, *Marsh. arb. Amer. p.* 103. Abies Canadensis, *Michx. fl.* 2. *p.* 207; *Michx. f. sylv.* 2. *t.* 149; *Loud. enc. tr. & shr. p.* 1035.

A large tree: in favorable situations, rising to the height of 60 – 80 feet, with a trunk 2 – 3 feet or more in diameter; the branches widely spreading, and horizontal or pendulous. Leaves distinctly 2-ranked, about half an inch long and scarcely a line wide, more or less distinctly serrulate towards the point. Sterile aments globose, about the size of a peppercorn, on short stalks which are surrounded at the base by brownish scales. Cones about three-fourths of an inch long, consisting of a few closely imbricated rather thin roundish scales, scattered towards the extremity of the branches. Seed (including the wing) three-fourths the length of the scale.

Woods, particularly on the sides of mountains, and along the rocky banks of streams: found in all parts of the State, but most abundant and of the greatest size in the northern counties. Large quantities of it occur on the Catskill mountains, where its bark is employed in numerous tanneries. The wood of the Hemlock is soft, coarse grained, and possesses little strength, but is durable if protected from the weather. It is much used for joists, in building houses. The bark is inferior to that of oak for tanning, but it makes excellent leather.

7. PINUS NIGRA, *Ait.* *Black* or *Double Spruce.*

Leaves solitary, scattered all around the branches, erect, short, somewhat quadrangular, entire; cones ovoid, the scales somewhat undulated, crenulated or toothed at the apex.—*Ait. Kew.* (ed. 1.) 3. *p.* 370; *Lamb. Pin. t.* 27; *Pursh, fl.* 2. *p.* 640; *Ell. sk.* 2. *p.* 640; *Bigel. fl. Bost. p.* 360; *Beck, bot. p.* 340; *Hook. fl. Bor.-Am.* 2. *p.* 163. Abies denticulata, *Michx. fl.* 2. *p.* 206. A. nigra, *Poir. dict.* 6. *p.* 520; *Michx. f. sylv.* 2. *t.* 147; *Loud. enc. tr. & shr. p.* 1031.

A tree usually from 30 – 60 feet high, with a straight and tapering trunk 8 – 15 inches in diameter, but occasionally 2½ feet or more. Leaves very dark green, 5 – 6 lines long, and scarcely a line broad. The cones vary in length from three-fourths of an inch to an inch and a half. The scales are rather thin, of a dark purple when young, but reddish brown when ripe, sometimes pretty deeply toothed at the apex. Seed (with the wing) about two-thirds the length of the scale.

Sphagnous swamps, and cold rocky mountainous situations. Found in many parts of the State (even as far south as New-York), but only abundant in the northern counties. The largest trees of Black Spruce that I ever saw, were in the valleys of the Essex mountains, particularly near the iron works of Archibald McIntyre, Esq., where there were several that measured nearly three feet in diameter. The wood is light, tough and elastic, and is very much used for the yards and spars of vessels, for which it is said to be more suitable than any other tree known. From the young twigs is prepared an extract that is known by the name of *essence of spruce*, which is used for flavoring *spruce beer*. The fresh twigs are also employed for the same purpose, being boiled with water, then mixed with molasses or sugar, and left to ferment.

8. PINUS ALBA, *Ait.* *White* or *Single Spruce.*

Leaves solitary, scattered around the branches, erect, quadrangular, somewhat glaucous, entire; cones oblong-cylindrical, loose; scales entire. — *Ait. Kew.* 3. *p.* 371; *Lamb. Pin. t.* 37; *Pursh, fl.* 2. *p.* 641; *Ell. sk.* 2. *p.* 610; *Beck, bot. p.* 340; *Hook. fl. Bor.-Am.* 2. *p.* 161. Abies alba, *Michx. fl.* 2. *p.* 207; *Michx. f. sylv.* 2. *t.* 148; *Loud. enc. tr. & shr. p.* 1030.

A small tree, seldom rising to the height of more than 40 – 50 feet, with a trunk about one foot in diameter; the bark of the branches light brown. Leaves more slender and acute than in the Black Spruce, as well as of a much lighter and bluish green color, 5 – 8 lines long. Cones 1 – 2 inches long and half an inch or three-fourths of an inch in diameter, pale green when young, brownish when mature; the scale obovate-cuneate, rounded at the extremity. Bracts minute, cuneate, ciliate at the tip. Seed small, with an obovate wing.

Swamps, and on the sides of mountains: rare south of Catskill, and much less frequent in the northern counties than the preceding species. *Fl.* May. The wood resembles that of the Black Spruce. The northern Indians use the tough slender roots for sewing together the pieces of birch bark of which they make their canoes, and the turpentine that exudes from the trunk serves to make the seams water-tight. Dr. Richardson says it is the last tree that disappears in approaching the pole.

**** LARIX, Tourn. *Sterile aments bud-like, scattered over the branches. Cells of the anthers opening longitudinally. Cones roundish or ovoid-conical, erect. Bracts (colored) and scales persistent. Leaves annual, linear, slender, fasciculate and diverging, produced from globose buds.*

9. PINUS PENDULA, *Ait.* *Tamarack. American Larch.*

Leaves fascicled, deciduous, short; cones ovoid-roundish, consisting of few nearly orbicular thin scales; bracts broadly ovate.—*Ait. Kew.* (ed. 1.) 3. *p.* 369; *Lamb. Pin. t.* 49; *Pursh, fl.* 2. *p.* 645; *Beck, bot. p.* 339; *Hook. fl. Bor.-Am.* 2. *p.* 164. P. microcarpa, *Lamb. l. c. t.* 50; *Pursh, l. c.; Bigel. fl. Bost. p.* 360; *Hook. l. c.* Larix Americana, *Michx. fl.* 2. *p.* 203; *Michx. f. sylv.* 2. *t.* 153; *Audub. birds of Amer. t.* 4; *Loud. enc. tr. & shr. p.* 1056.

A tall straight tree (50 – 80 feet or more in height and 1 – 3 feet in diameter), with smooth bark and horizontal branches. Leaves soft and flexible, growing in numerous tufts which are scattered along the sides of the branches. Aments yellow or reddish; the sterile small, oblong. Cones about half an inch long, green or violet-colored when young, brownish when old. Scales about 20, loosely imbricated, somewhat woody, flattish, entire. Bracts less than half the length of the scale, usually emarginate, with a short straight mucro.

Swamps: abundant in the northern counties, and some parts of western New-York, as between Utica and Syracuse. *Fl.* May. The wood is strong and durable, but is very heavy. It is chiefly employed in ship-building. Many European botanists consider *P. pendula* and *P. microcarpa* as distinct species, but they seem to be mere varieties, caused by differences of soil and exposure.

SUBORDER II. CUPRESSINÆ. *L. C. Rich.* THE CYPRESS TRIBE.

Aments monœcious or diœcious, imbricated, without bracts, few-flowered. Anthers with 4 – 12 cells; the connective peltate, or attached at the base. Ovules 1 – 2 or more, at the base of the carpellary scales, erect. Cones indurated, or the scales concreted and fleshy. Integument of the seed bony or membranous. — Leaves mostly evergreen.

2. CUPRESSUS. *Tourn.; Endl. gen.* 1791. *CYPRESS.*

[From the Island of *Cyprus*, where one species of the tree is abundant.]

Sterile aments solitary. Anthers 2 – 4 celled. Fertile aments subglobose, with peltate scales. Ovules 8 or more, bottle-shaped. Cones globose; the scales ligneous, protuberant

or mucronate in the centre, at first connate, finally separating. Seeds compressed, angular, affixed to the contracted bases of the scales. Cotyledons 2. — Evergreen trees, with small scale-like closely imbricated appressed leaves.

1. CUPRESSUS THUYOIDES, *Linn.* *White Cedar.*

Branchlets compressed; leaves imbricated in 4 rows, ovate, each with a small glandular tubercle on the back. — *Linn. sp.* 2. *p.* 1003; *Michx. fl.* 2. *p.* 208; *Michx. f. sylv.* 2. *p.* 152; *Pursh, fl.* 2. *p.* 646; *Ell. sk.* 2. *p.* 644; *Bigel. fl. Bost. p.* 361; *Beck, bot. p.* 338; *Hook. fl. Bor.-Am.* 2. *p.* 165; *Loud. enc. tr. & shr. p.* 1074. Thuya sphæroidalis, *L. C. Rich. mem. conif. p.* 45.

A tree 30 – 70 feet high and 8 inches to 2 feet or more in diameter; the bark fibrous, and separating in long shreds. Leaves in very young plants (seedlings of one or two years growth) linear, about one-fourth of an inch long, distinct and spreading, mostly in close whorls of three together; but in the mature plant only about a line in length, very closely imbricated, of a dull glaucous green hue; the middle of the back furnished with a small protuberant vesicle which is filled with a thin turpentine. Sterile aments globose, minute, solitary at the extremity of the branchlets, each consisting of 6 – 8 ovate concave brownish scales, which are attached by the base to a short filament: anther-cells 2 under each scale. Cones the size of an ordinary pea, purplish when mature, consisting of a few thick somewhat fleshy scales, which are furnished with a short flat point. Seeds 2? under each scale, oval, compressed, surrounded with a narrow winged border.

Sphagnous swamps. Long Island, where, in several places (as near Rockaway, Hempstead, Babylon and Islip) it occurs in considerable quantities. Also at Peach Pond, Putnam county (*Dr. Mead*). The wood of this tree is light, fine-grained, and exceedingly durable. It is used like the Cypress, for shingles, cedar-ware, fence-rails, etc. It is also sawed into boards. The tree is of very slow growth, a stock only a foot in diameter showing one or two hundred annual circles.

3. THUYA. *Linn.; Endl. gen.* 1790. *ARBOR VITÆ.*

[From the Greek, *thyon*, sacrifice; the resin of the Eastern species having been used as incense in sacrifices.]

Flowers monœcious. Sterile aments terminal, very small, ovoid. Anther-cells 4, opening longitudinally. Fertile aments consisting of a few imbricated scales, each with 2 erect ovules at the base. Cone ovoid or roundish; the scales somewhat peltate or ovate, imbricated, smooth or with a recurved beak near the tip. Seeds 2 (or by abortion one) under each scale, usually more or less winged. Cotyledons 2.—Evergreen trees or shrubs, with scale-like leaves, which are closely imbricated in two or four rows, and compressed.

1. THUYA OCCIDENTALIS, *Linn.* *Common Arbor Vitæ.*

Branchlets 2-edged, spreading; leaves imbricated in 4 rows, ovate-rhomboid, closely appressed, with a small flattened gland on the back; cones nodding, obovoid, the scales few (5 – 7), inferior ones truncate, gibbous at the tip; seeds compressed, winged all round. — *Linn. sp.* 2. *p.* 1002; *Michx. fl.* 2. *p.* 226; *Pursh, fl.* 2. *p.* 646; *Michx. sylv.* 2. *p.* 156; *Ell. sk.* 2. *p.* 644; *Bigel. fl. Bost. p.* 361; *Beck, bot. p.* 338; *Hook. fl. Bor.-Am.* 2. *p.* 165; *Loud. enc. tr. & shr. p.* 1068.

A tree with a narrowly conical and tapering head, seldom (within our limits) more than 30 or 35 feet high and 6 – 12 inches in diameter, much branched; the ultimate divisions flattened and covered with numerous obtuse shining leaves, each furnished with a little vesicle which (as in the White Cedar) is filled with a thin aromatic turpentine. Sterile aments minute at the extremity of the branchlets, consisting of a few concave scale-like anthers. Cones about five lines long, yellowish brown; the scales loosely imbricated, opening to the base. Seeds conspicuously winged, emarginate, one under each scale.

Rocky banks of rivers and hill-sides, also in swamps: abundant and very conspicuous on the Hudson above Newburgh; Oriskany swamp; and various parts of the northern and western counties. *Fl.* May. The wood is light, of a reddish color, and, though soft, is very durable. It is not much used for lumber, as its trunk does not afford pieces of sufficient length. It is often planted about houses and in pleasure grounds. In some parts of the country it is known by the name of White Cedar, and in New-England it is often called Hackmatack.

4. JUNIPERUS. *Linn.; Endl. gen.* 1789. *JUNIPER.*

[So named from *juniperus*, the Celtic word for rough or rude; which is the character of the genus.]

Flowers dicœcious. Sterile aments very small, axillary or terminal. Anther-cells 3 – 6, attached to the lower edge of the excentrically peltate scale, opening longitudinally. Fertile aments axillary, ovoid, with imbricated bracts at the base. Involucre formed of 3 – 6 scales which are united at the base, bearing 1 – 3 ovules. Fruit drupaceous, formed of the succulent involucre, which encloses 1 – 3 crustaceous seeds. — Evergreen trees or shrubs, with rigid, scale-like or acicular, opposite or ternate leaves.

1. JUNIPERUS COMMUNIS, *Linn.* *Common Juniper.*

Leaves in threes, subulate, spreading, mucronate; berries somewhat ovoid.—*Linn. sp.* 2. *p.* 1040; *Michx. fl.* 2. *p.* 245; *Engl. bot. t.* 1100; *Pursh, fl.* 2. *p.* 647; *Bigel. med. bot. t.* 44, *& fl. Bost. p.* 371; *Beck, bot. p.* 337; *Darlingt. fl. Cest. p.* 571; *Hook. fl. Bor.-Am.* 2. *p.* 165; *Loud. enc. tr. & shr. p.* 1081.

A rigid shrub, usually spreading flat on the ground, but sometimes rising to the height of from 2 – 8 feet. Leaves 4 – 7 lines long, sharply mucronate, flattish, bright green and shining underneath, glaucous along the midrib above. Sterile aments numerous, in the axils of the leaves, about 2 lines long; the anther-scales cuspidate upward: cells 2 – 4 under each scale. Berries the size of a small pea, dark purplish, containing from 1 – 3 seeds.

Dry woods and hills: rather rare. The berries are well known for their stimulating and diuretic properties, as well as for being employed in the distillation of gin (See *Bigel. med. bot. l. c.*).

2. JUNIPERUS VIRGINIANA, *Linn.* *Red Cedar.*

Leaves imbricated in 4 rows; those of the small twigs ovate and closely imbricated; those of the older branches, and of very young plants, subulate, cuspidate, and somewhat spreading. — *Linn. sp.* 2. *p.* 1040; *Walt. fl. Car. p.* 243; *Michx. fl.* 2. *p.* 245; *Michx. f. sylv.* 2. *t.* 155; *Pursh, fl.* 2. *p.* 647; *Bigel. med. bot. t.* 45, *& fl. Bost. p.* 370; *Ell. sk.* 2. *p.* 717; *Beck, bot. p.* 337; *Audub. birds of Amer. t.* 43; *Loud. enc. tr. & shr. p.* 1084. J. Sabina, *Hook. fl. Bor.-Am.* 2. *p.* 166, not of Linn.?

var. *prostrata:* small, trailing on the ground and rooting. J. prostrata, *Michx. l. c.; Pers. syn.* 2. *p.* 632? J. repens, *Nutt. gen.* 2. *p.* 245.

A tree 15 – 30 feet high and 8 – 15 inches in diameter, tapering rapidly upward, with numerous horizontal branches, the lowest of which are close to the ground. Leaves of young bushes subulate, frequently acute and in distinct pairs, more or less spreading; on the small twigs of the mature plant, more or less ovate and closely imbricate, but increasing in length with the growth of the branch till they become subulate like those of the young plant, but are usually more or less appressed. The short imbricated leaves are marked with a more or less distinct glandular vesicle on the back. Anthers excentrically peltate. Berries a little larger than a peppercorn, roundish-ovoid, 1 – 3-seeded, purple, and covered with a bright bluish powder.

Dry hill-sides, in rocky sterile soil: common in most parts of the State; the creeping variety on the banks of the Genesee river (*Dr. Bradley*). *Fl.* April. *Fr.* October. The wood of this tree is extremely compact and durable. The heart is red, and the sap white. In the Northern States, on account of its small size, it is chiefly used for posts, most of the Red Cedar which is employed for ship timber being brought from the South. Sir William Hooker considers the *J. Virginiana* as identical with the Savin (*J. Sabina*) of Europe, to which he also unites *J. Bermudiana, J. Barbadensis,* and *J. prostrata* of Europe, but I have not yet had an opportunity for making the comparisons that would be necessary before adopting his views. The leaves of the Red Cedar are generally believed to possess the medicinal properties of Savin.

SUBORDER III. TAXINEÆ. *L. C. Rich.* THE YEW TRIBE.

Flowers dicœcious, or sometimes monœcious ; the sterile in small aments, which are surrounded with scale-like bracts at the base. Anthers mostly 2-celled, opening longitudinally. Fertile flowers solitary, terminal, consisting of an erect or inverted ovule, which is bracteate at the base, surrounded with and sometimes entirely enclosed in a disk, which at maturity is fleshy and drupaceous. Embryo with 2 cotyledons.

5. TAXUS. *Linn. ; Endl. gen.* 1799. YEW.

[Said to be derived from *toxon*, the Greek word for a bow ; on account of the use made of the wood.]

Flowers dicœcious. Sterile flowers consisting of peltate anthers in an ament : anther-cells 3 – 6 or more, inserted in the lobes of the connective. Fertile flower an erect ovule, with an annular disk at its base, and invested with imbricated scales. Seed nut-like, seated in the disk, which becomes a fleshy open cup. — Evergreen trees or shrubs, with linear acute rigid leaves, which are more or less distinctly 2-rowed.

5. TAXUS CANADENSIS, *Willd.* *American Yew. Ground Hemlock.*

Leaves distinctly 2-ranked, crowded, revolute ; sterile aments solitary, globose.—*Willd. sp.* 4. *p.* 856 ; *Pursh, fl.* 2. *p.* 647 ; *Bigel. fl. Bost. p.* 371 ; *Beck, bot. p.* 341 ; *Darlingt. fl. Cest. p.* 572 ; *Audub. birds of Amer. t.* 117. T. baccata, *var.* minor, *Michx. fl.* 2. *p.* 245 ; *Hook. fl. Bor.-Am.* 2. *p.* 167.

Stem rigid, usually straggling and diffuse, but sometimes rising 1 – 4 feet from the ground. Leaves 6 – 8 lines long and about a line wide, of a deep shining green. Sterile aments axillary, arising from little yellowish buds of imbricated scales. Fruit consisting of a naked ovoid compressed seed, more or less deeply immersed in a bright red juicy cup or disk.

Rocky banks, and in woods, particularly under the shade of evergreen trees. *Fl.* April. *Fr.* August – September. Always a humble shrub with us, but in Oregon (if indeed that be not a distinct species) it becomes a tree. Hooker and Michaux have regarded it as identical with the European Yew. In the northern part of the State this plant is abundant, and it is sparingly found in the valley of the Hudson. Mr. L. Ménard found it as far south as Manhattanville, on the Island of New-York.

CLASS III. ENDOGENOUS OR MONOCOTYLEDONOUS PLANTS.

Stem with no distinction of bark, pith and wood, and without medullary rays or concentric rings; the woody matter consisting of bundles of fibres and vessels imbedded in cellular tissue, increasing in diameter by the addition of new matter to the centre. Leaves mostly alternate, with no evident articulation, commonly sheathing at the base and entire, generally with parallel veins. Flowers usually with a single perianth, or the calyx and corolla undistinguishable, the parts arranged in a ternary manner. Ovules enclosed in an ovary, and fertilized through the medium of a stigma. Embryo with a single cotyledon; or, if two, one is smaller and alternate with the other.

CONSPECTUS OF THE GROUPS AND ORDERS.

GROUP 1. Flowers mostly on a spadix; with the perianth simple and scale-like or wanting. — Chiefly herbs.

Order 106. ARACEÆ. Flowers usually without a perianth, seated on a spadix, which is surrounded by a spatha, or sometimes naked; the fertile ones commonly below. Ovary 1 – several-celled, with one or more ovules.

107. LEMNACEÆ. Flowers produced from the margin of a frond. Fruit an utricle. — Minute floating plants.

108. TYPHACEÆ. Flowers in dense spikes or heads, without a perianth. Stamens numerous, intermixed with simple filaments or scales. Ovary with a single suspended ovule. Fruit somewhat drupaceous. — Aquatic or marsh plants, with linear leaves.

109. NAJADACEÆ. Perianth simple or none. Stamens definite. Ovaries single, or 2 – 4 and distinct, one-seeded. Water plants with cellular leaves and sheathing stipules. Flowers inconspicuous, monœcious or perfect.

GROUP 2. Flowers not on a spadix, furnished with a double perianth (calyx and corolla). Ovaries 3 – 6 or numerous, free, distinct or more or less united. — Aquatic or marsh plants.

110. ALISMACEÆ. Flowers regular, perfect or polygamous, mostly in racemes or panicles. Sepals and petals 3. Seeds usually solitary in each carpel. — Marsh plants, with ribbed leaves and flowers on scapes. Rhizoma usually creeping.

GROUP 3. Flowers with a single or double perianth, which coheres with the lower part, or with the whole surface of the ovary. — Herbs.

111. HYDROCHARIDACEÆ. Flowers with regular calyx and corolla, adherent to the ovary. Seeds numerous. — Water plants.

112. ORCHIDACEÆ. Flowers perfect, irregular; the perianth of 6 parts. Ovary inferior; the single fertile stamen (or in Cypripedium the two stamens) coherent with the style. Pollen of 2 or more waxy masses. Ovary inferior, one-celled, with 3 parietal placentæ. Seeds very numerous. — Herbs.

113. HYPOXIDEÆ. Flowers perfect, regular, on scapes. Perigonium petaloid, 6-parted, the centre adherent to the ovary. Stamens 6. Fruit indehiscent, many-seeded. Embryo straight, in the axis of fleshy albumen. — Herbs with grass-like leaves.

114. IRIDACEÆ. Flowers mostly regular and showy. Perianth 6-parted, in 2 series. Anthers extrorse. Stigmas dilated or petaloid. — Herbs, with bulbs, corms or rhizomas. Leaves equitant.

115. DIOSCOREACEÆ. Flower small and dicœcious. Perianth 6-parted. Stamens 6. Ovary 3-celled. — Twining plants; the leaves ribbed and reticulately veined.

GROUP 4. Flowers with regular perianth, often in two series which are more or less petaloid (rarely glumaceous), free from the 3-celled ovary. Seeds albuminous. — Herbs; rarely climbing or shrubby plants.

116. SMILACEÆ. Perianth 6-parted. Stamens 6. Stigmas 3. Berry few- or many-seeded. Albumen hard.— Herbs or shrubby plants, often climbing and prickly. Leaves reticulately veined.

117. LILIACEÆ. Perianth colored. Stamens 6. Styles united. Fruit capsular or sometimes fleshy. Albumen fleshy. — Herbs with the leaves sheathing or clasping at the base.

118. PONTEDERIACEÆ. Flowers arising from the spatha, or from a fissure of the petiole. Perianth 6-cleft and persistent, or withering. Stamens 3 or 6. Capsules often one-celled. Albumen farinaceous. — Aquatic plants.

119. MELANTHACEÆ. Perianth regular, in a double series. Stamens 6. Capsules 3-parted. Embryo fleshy.— Herbs, with bulbs, corms, or fasciculated roots.

120. JUNCACEÆ. Perianth 6-leaved, glumaceous. Capsules 1 – 3-celled.— Herbaceous grass-like plants.

GROUP 5. Flowers with a double or imbricated perianth; the exterior glumaceous or herbaceous; the interior petaloid. Ovary free, 1 – 3-celled. — Herbs, often grass-like.

121. COMMELYNACEÆ. Calyx herbaceous. Filaments often hairy. Styles and stigmas united. Capsules 2 – 3-celled, few-seeded. — Perennial herbs, with fibrous or tuberous roots.

122. XYRIDACEÆ. Calyx glumaceous. Petals with claws. Stamens 6, 3 of them sterile. Capsules 1-celled, many-seeded. — Rush-like plants, with scapes, and the flowers in heads.

123. ERIOCAULINEÆ. Flowers minute, diœcious or monœcious, in dense heads intermixed with scales or hairs. Calyx glumaceous. Corolla 3-cleft. Stamens 6, the alternate ones imperfect. Capsules 2 – 3-celled, 2 – 3-seeded. — Aquatic or marsh rush-like plants.

GROUP 6. Flowers imbricated with bracts (glumes and scales), and disposed in spikelets; the proper perianth either wanting, or taking the form of bristles or scales. Ovary one-celled, with a solitary ovule, becoming an achenium or caryopsis in fruit. Embryo at the extremity of albumen next the hilum.

124. CYPERACEÆ. Flowers solitary in the axil of each bract. Perianth none, or in the form of bristles or scales Styles 2 – 3, commonly united. Fruit an achenium. — Culms usually solid. Sheaths of the leaves entire.

125. GRAMINEÆ. Flowers in 2-ranked spikelets, usually several bracts to each flower, the inner 2 usually more delicate than the others. Perianth none, or in the form of 1 – 3 very minute scales. Styles or stigmas 2. Fruit a caryopsis. — Culms hollow, closed at the nodes: sheaths of the leaves split.

GROUP 1. *Flowers mostly on a spadix, with the perianth either wanting or scale-like, rarely regular and simple. — Chiefly herbs; often aquatic.*

ORDER CVI. ARACEÆ. *Juss.* THE ARUM TRIBE.

Spadix often naked at the extremity, usually surrounded by a spatha. Flowers usually monœcious on the same spadix, and destitute of floral envelopes; in a few genera, furnished with a more or less distinct perianth. Sterile flowers above: anthers commonly with a thick truncate connective. Ovary one- to several-celled, with one or several ovules. Seeds mostly with fleshy albumen, rarely destitute of albumen when the embryo is large and globular.— Herbs with a fleshy cormus or rhizoma (in tropical countries sometimes shrubby or climbing). Leaves with sheathing petioles; the lamina mostly large, compound or divided.

CONSPECTUS OF THE GENERA.

* *Spadix surrounded by a spatha.*

† Flowers monœcious or (sometimes) polygamous; the sterile above the fertile.

1. ARISÆMA. Spathe convolute below. Spadix naked above. Flowers without a perianth. Anthers distinct. Ovules orthotropous. Berries distinct, 1 – several-seeded.
2. PELTANDRA. Spathe elongated, convolute, undulate on the margin. Spadix covered with flowers. Perianth none. Anthers 5 – 6-celled; the cells surrounding a thick peltate connective, opening by a terminal pore. Ovules anatropous. Berries distinct, 1 – 2-celled.

†† Flowers perfect.

3. CALLA. Spathe ovate, expanding. Spadix covered with perfect flowers which are destitute of a perianth. Ovules anatropous. Berries distinct, several-seeded.
4. SYMPLOCARPUS. Spathe convolute and cucullate. Spadix on a short peduncle, oval, covered with perfect flowers. Perianth of 4 cucullate leaflets. Ovary with a single ovule. Berries united, and immersed in the spongy spadix.

** *Spadix naked.*

5. ORONTIUM. Spadix terminating the scape, covered with perfect flowers. Ovary one-celled.
6. ACORUS. Spadix bursting from the side of a leaf-like scape, covered with perfect flowers. Ovary 2 – 3-celled.

1. ARISÆMA. *Mart.* "*in Flora*, 1831, *p.* 459"; *Endl. gen.* 1674. *DRAGON ARUM.*

[Meaning of the name uncertain.]

Flowers monœcious or polygamous. Spathe convoluted below, the limb arched or flattish. Spadix naked above and sometimes exserted; the lower part covered with flowers, of which the upper ones are sterile and the lower fertile, or, in some plants, wholly sterile. Perianth wanting. Anthers somewhat verticillate and distinct, with very short filaments, 2 – 4-celled; the cells opening by a pore or chink. Ovaries 1-celled, numerous, distinct, turbinate. Ovules 5 – 6, erect from the base of the ovary, orthotropous: style almost wanting: stigma capitate-peltate. Berry one- to several-seeded. Embryo in the axis of albumen. — Herbs with a tuberous rhizoma or corm, and stalks formed of the united scapes and petioles. Leaves divided.

1. ARISÆMA TRIPHYLLUM. *Indian Turnip.*

Leaves ternately divided; segments elliptical-ovate; spadix clavate, obtuse, shorter than the spathe. A. atrorubens, *Blume; Kunth, enum.* 3. *p.* 17. Arum triphyllum, *Linn. sp.* 2. *p.* 965; *Michx. fl.* 2. *p.* 188; *Pursh, fl.* 2. *p.* 399; *Ell. sk.* 2. *p.* 629; *Bot. mag. t.* 950; *Bigel. med. bot. t.* 4, & *fl. Bost. p.* 347; *Torr. compend. p.* 358; *Bot. cab. t.* 320; *Beck, bot. p.* 381; *Darlingt. fl. Cest. p.* 530; *Hook. fl. Bor.-Am.* 2. *p.* 168. A. atrorubens, *Ait. Kew.* 3. *p.* 315.

Corm fleshy, round and flattened, 1 – 3 inches in diameter, wrinkled; the upper part covered with scaly sheaths. Leaves mostly two (sometimes solitary), so deeply divided as to appear trifoliate; the segments 3 – 8 inches long, variable in breadth, acuminate, sessile: petiole 6 – 12 inches or more in length; their sheathing petioles surrounding the lower part

of the scape, and exceeding it in length. Spathe ovate ; the lower half convolute into a tube ; the upper portion flattened and arched over at the top, dark purple, greenish or variegated ; the petioles and scape having the same color as the spathe. Spadix much shorter than the spathe ; the club-shaped naked portion abruptly contracted into a neck below, a little longer than the tube of the spathe ; the lower part covered with flowers, which in the green spathes are usually sterile, and in the purple or variegated they are fertile or androgynous. Anthers 2 – 4- (and sometimes 5 – 6-) celled ; the cells roundish, opening by a large circular orifice. Often in place of the anthers there are 3 – 6 depressed purple reniform bodies which open excentrically, but contain no pollen. Ovaries crowded, tipped with a globose stigma : ovules 5 – 6. Berries forming a dense ovoid head, of a bright scarlet color, smooth and shining. Seed solitary or several, globose, with a large hilum at the base. Embryo in the axis of farinaceous albumen.

Moist shady places. *Fl.* May. *Fr.* August – September. The recent tuber is extremely acrid, so that when applied to the tongue it causes violent pain, and often much swelling ; but in a dry state it is mild, and yields abundance of a nutritious starch resembling sago. Dr. Bigelow has shown that the active principle is a volatile inflammable matter, which is soluble in both water and alcohol (See his *med. bot. l. c. ;* also *Wood & Bache's U. S. Dispens. p.* 114).

Blume considers the *Arum triphyllum* of Linnæus as including two species, one a Brazilian plant, the other ours ; the former he calls *Arisæma Brasilianum*, the latter *A. atrorubens.*

2. ARISÆMA DRACONTIUM, *Schott.* (Plate CXXIII.) *Greendragon.*

Leaf usually solitary, pedate ; the segments lanceolate-oblong, acuminate, entire ; spadix subulate, much longer than the oblong acuminate convolute spathe.—*Schott, melet.* 1. *p.* 17, ex *Kunth, enum.* 3. *p.* 18, *and* A. Boscii *of the same authors.* Arum Dracontium, *Linn. sp.* 2. *p.* 964 ; *Michx. fl.* 2. *p.* 188 ; *Pursh, fl.* 2. *p.* 399 ; *Nutt. gen.* 2. *p.* 222 ; *Ell. sk.* 2. *p.* 629 ; *Bot. reg. t.* 668 ; *Beck, bot. p.* 381 ; *Darlingt. fl. Cest. p.* 529.

Corms roundish, often clustered, throwing up bunches of leaves and scapes. Leaf with 7 – 11 segments, which are spreading, 2 – 6 inches in length and 1 – 2 inches or more wide, sessile or tapering at the base into short stalks : common petiole 8 – 15 inches long. Peduncle shorter than the petiole. Spathe 1 – 2 inches long, greenish. Spadix polygamous, bearing flowers only toward the base ; in some plants wholly sterile, in others androgynous, the fertile below ; the upper part tapering into a slender point, which is exserted 2 – 4 inches beyond the summit of the spathe. Stamens distinct, with very short filaments, 4-celled. Ovaries numerous, turbinate, with scarcely any style : stigma peltate-capitate : ovules 6 – 8, bottle-shaped, erect. Ripe berries not examined, but, according to Dr. Darlington, they form an ovoid cluster of a reddish orange when mature.

Low grounds, particularly along rivers : valley of the Mohawk, etc. *Fl.* April – May. *Fr.* September. It is known in some places by the name of *Dragon-root.*

2. PELTANDRA. *Raf. in jour. de phys.* 89. *p.* 103; *Endl. gen.* 1685. *ARROW ARUM.*

[From *pelte*, a target or shield, and *aner*, an anther, in allusion to the form of the sterile organs.]

LECONTIA, *W. Carp.*, not of *A. Rich.*

Spathe elongated, convolute, undulate on the margin, curved at the apex. Spadix covered with flowers. Perianth none. Anthers sessile, closely covering all the upper part of the spadix in a tessellated manner, sessile, with 5 – 6 cells surrounding the margin of a thick truncate connective, opening by a terminal pore. Ovaries one-celled, clustered on the lower part of the spadix, each containing 5 – 6 sessile erect anatropous ovules. Berry ovoid, forming a dense greenish cluster, 1 – 3-seeded. Seed obovoid-globose, surrounded with a very tenacious jelly. Embryo in fleshy albumen. — Stemless herbs, with sagittate leaves and green spathes.

1. PELTANDRA VIRGINICA, *Raf. l. c.* (Plate CXXIV.) *Arrow-leaved Arum.*

Kunth, enum. 3. *p.* 44. P. undulata, *Raf. l. c.; Kunth, l. c.* Arum Virginicum, *Linn. sp.* 2. *p.* 966; *Pursh, fl.* 2. *p.* 399; *Ell. sk.* 2. *p.* 630. Calla Virginica, *Michx. fl.* 2. *p.* 187; *Bigel. fl. Bost. p.* 348. Lecontia Virginica, *Torr. compend. p.* 358; *Eat. man.* (ed. 6.) *p.* 200. Caladium Virginicum, *Hook. exot. fl. t.* 182. Rensselaria Virginica, *Beck, bot. p.* 382; *Darlingt. fl. Cest. p.* 530.

Root a tuft of thick fibres. Leaves all radical, 12 – 15 inches long (including the petiole), of a deep and shining green, hastate-sagittate, acuminate; the lobes at the base more or less spreading and of variable breadth, usually obtuse. Scapes several from one root, about the length of the leaves. Spathe 3 – 5 inches long, narrow and cylindrical, somewhat fleshy, closely surrounding the spadix, tapering to an acute point; the margin more or less waved; the upper part finally separating, and the lower swelling into an ovoid form by the growth of the fruit. Spadix nearly as long as the spathe, tapering, and covered all over with flowers; the stamens occupying the greater portion, and presenting a tessellated appearance. Anthers from mutual compression presenting the form of elongated hexagons, peltately attached to the axis, flatly truncate; the cells close to the margin, but imbedded in the substance of the connective. Ovaries numerous. Berries in an ovoid head at the extremity of the finally recurved scape, covered by the persistent base of the spathe, green when ripe.

Swamps and borders of ponds: common. *Fl.* June – July. *Fr.* September.

3. CALLA. *Linn.; L. C. Rich. in Guill. arch.* 1. *p.* 15. *t.* 2.; *Endl. gen.* 1697.

WATER ARUM.

[An ancient name of some plant allied to ARUM.]

Spathe ovate, expanding, persistent. Spadix covered with flowers, which are destitute of a perianth, and consist of pistils surrounded by stamens. Anthers with slender filaments,

2-celled; the cells distinct, opening longitudinally. Ovaries one-celled, with 5 – 6 anatropous ovules: stigma sessile, discoid. Berries distinct, depressed, few-seeded, oblong-ovoid, striate. Embryo conspicuous, in the axis of a somewhat horny albumen. — An aquatic herb, with a prostrate and creeping rhizoma, cordate leaves, and a whitish spathe.

1. CALLA PALUSTRIS, *Linn.* *Water Arum.*

Linn. sp. 2. *p.* 968; *Michx. fl.* 2. *p.* 187; *Pursh, fl.* 2. *p.* 399; *Bot. mag. t.* 1831; *Bigel. fl. Bost. p.* 348; *Torr. compend. p.* 358; *Beck, bot. p.* 382; *L. C. Rich. l. c.*; *Kunth, enum.* 3. *p.* 59.

Rhizoma thick, jointed. Leaves on long stout footstalks; the lamina 3 – 5 inches long and 2 – 4 inches wide, abruptly acuminate, with an involute mucro; the veins undivided, and curving from the base to the summit. Scape about as long as the leaves. Spathe 1 – 2 inches long, spreading or flattish, clasping at the base, with a short abrupt involute point, green outside, whitish within. Spadix oblong, covered with crowded flowers. Stamens indefinite: anthers didymous; the cells obliquely attached to the summit of the filament. Berries ovoid, red.

Sphagnous swamps: frequent in the northern and western parts of the State. The most southern station known to me is that of Coldenham, in Orange county, where it was found by Mr. M. B. Halsted. *Fl.* June. Like many other ARACEÆ, it is acrid, but loses this quality by drying.

4. SYMPLOCARPUS. *Salisb.; O. Rich, gen. N. Am. pl. p.* 17 (1814); *Nutt. gen.* 1. *p.* 105; *Endl. gen.* 1705.* *SKUNK CABBAGE.*

[From the Greek words, *symploke*, connexion, and *karpos*, fruit; the berries being united.]

ICTODES, *Bigel.* SPATHYEMA, *Raf.*

Spathe cucullate-shellform, acuminate. Spadix on a short thick peduncle, ovoid-globose, covered with perfect flowers, which are furnished with a 4-leaved perianth. Stamens 4, opposite the cucullate leaves of the perianth: anthers 2-celled; the cells oblong, parallel, extrorse. Ovary one-celled, with a single anatropous suspended ovule: style 4-angled, pyramidal: stigma minute. Berries immersed in the spongy spadix, and, with the finally succulent perianth, forming a kind of compound fruit. Seed ovoid, destitute of albumen, but with a large fleshy globular embryo, consisting chiefly of radicle, with one or sometimes several plumules. — Fetid stemless herbs, with a straight rhizoma, short nearly sessile spathe, and entire leaves.

* This genus was indicated by R. Brown, in *Prodr. p.* 337, and the peculiarities of the seed described.

1. SYMPLOCARPUS FŒTIDUS, *Salisb.* *Common Skunk Cabbage.*

Leaves ovate, cordate ; spadix oval, much shorter than the spathe.—*Nutt. gen.* 1. *p.* 105 ; *Bart. veg. mat. med. t.* 10 and 11 ; *Torr. fl.* 1. *p.* 181 ; *Hook. in bot. mag. t.* 3224 ; *Beck, bot. p.* 382 ; *Darlingt. fl. Cest. p.* 112 ; *Hook. fl. Bor-Am.* 2. *p.* 168 ; *Kunth, enum.* 3. *p.* 84. Dracontium fœtidum, *Linn. sp.* 2. *p.* 967. Pothos fœtidus, *Michx. fl.* 2. *p.* 186 ; *Pursh, fl.* 2. *p.* 398 ; *Bot. mag. t.* 836. Ictodes fœtida, *Bigel. med. bot. t.* 24, and *fl. Bost. p.* 59.

Rhizoma thick, descending, abruptly terminating in whorls of numerous fleshy fibres. Leaves appearing several weeks after the spathe, and forming large bunches, petiolate ; the lamina from 8 – 18 inches or more in length, with large oblong sheaths. Spathe ovate, convolute, spotted and striped with purplish brown, green and yellow, incurved at the summit, of a thick and fleshy texture. Spadix about an inch long, densely covered with purplish flowers. Leaflets of the perianth cuneate, truncate, fleshy. Stamens a little exserted ; the anthers oblong, with parallel cells. Ovaries immersed in the spadix ; the style straight, 4-sided and tapering to a point. Seed the size of a large pea, purplish and green ; the plumule near the base.

Low wet grounds : common. *Fl.* February – March. *Fr.* September. This plant is universally known for its rank odor, and, as remarked by Dr. Bigelow, "it is exceedingly meritorious of the name it bears." It contains a volatile principle which has not been insulated, besides the acrid matter which is common to many of the ARACEÆ. The plant is a domestic remedy for asthma and other spasmodic diseases. A second species (*S. Kamtschaticus*) grows on the Northwest Coast.

5. ORONTIUM. *Linn. ; Nutt. gen.* 1. *p.* 226 ; *Endl. gen.* 1706. *GOLDEN-CLUB.*

[An ancient name, supposed to allude to the river *Orontes*.]

Spathe none. Spadix cylindrical, continuous with the scape, covered with perfect flowers. Sepals 4 – 6, truncate, concave. Stamens 4 – 6 ; the filaments broad : anthers 2-celled ; the cells opening from the summit obliquely downward. Ovary one-celled, amphitropous, transverse. Fruit an utricle. Seed without albumen ; the embryo large and fleshy. Plumule lying in a groove on the outside of the thick radicle.— An aquatic herb, with entire floating leaves, and the spadix on a long terete peduncle.

1. ORONTIUM AQUATICUM, *Linn.* *Golden-club. Floating Arum.*

Linn. sp. (ed. 2.) 1. *p.* 463 ; *Amœn. acad.* 3. *p.* 17. *t.* 1. *f.* 3 ; *Michx. fl.* 1. *p.* 194 ; *Pursh, fl.* 1. *p.* 235 ; *Ell. sk.* 1. *p.* 404 ; *Bart. fl. Am. Sept.* 2. *t.* 37 ; *Hook. exot. fl. t.* 19 ; *Lodd. bot. cab. t.* 402 ; *Torr. fl.* 1. *p.* 358 ; *Beck, bot. p.* 381 ; *Darlingt. fl. Cest. p.* 226 ; *Kunth, enum.* 3. *p.* 85.

Leaves on long petioles, floating; the lamina varying from oblong-lanceolate to elliptical-ovate, at first small, but finally 8 – 10 inches long and 2 – 3 inches wide, deep green and dull above, pale underneath, abruptly coalescing with the petiole. Scape 8 – 18 inches long. Spadix 1 – 2 inches long, yellow, somewhat tapering; the lower flowers hexamerous, the upper tetramerous. Sepals dilated. Stamens about the length of the sepals; the filaments broadly flat: anthers of 2 roundish lobes, which open on the margin on the upper part. Ovary roundish, with a minute sessile stigma. Ovule solitary, arising from the base and lying transversely. Utricle roundish, the size of a pea, green. Seed surrounded with a tough gelatinous coat, consisting chiefly of a thick fleshy embryo which is destitute of albumen, with a large concealed cavity at the summit; the plumule curved in a groove on the outside, and consisting of three sheathing leaves.

Marshes and pools; chiefly within the limits of salt or brackish water, but occasionally found in the interior of the State. *Fl.* April – May *Fr.* August.

6. ACORUS. *Linn.; L. C. Rich. in Guill. arch.* 1. *p.* 22. *t.* 3; *Endl. gen.* 1708.

SWEET-FLAG, OR *CALAMUS.*

[From the Greek, *a*, without, and *kore*, the pupil of the eye; having been used for sore eyes.]

Spathe leaf-like, continuous with the scape. Spadix terete, covered with perfect flowers. Calyx of 6 concave sepals. Stamens 6, inserted at the base of the sepals; the filaments linear: anthers reniform, one-celled, opening transversely. Ovary 2 – 3-celled, with several pendulous orthotropous ovules in each cell: stigma minute. Fruit baccate or capsular, gelatinous inside, 1 – few-seeded; the seed oblong-ovoid. Embryo in the axis of albumen. — Marsh plants, with a creeping thick aromatic rhizoma, and distichous ensiform leaves. Spadix lateral from a leaf-like scape, the upper portion of which is regarded as an open spathe.

1. ACORUS CALAMUS, *Linn.* *Common Calamus*, or *Sweet Flag.*

Scape ancipital, with a very long ensiform leaf-like spathe above the spadix.—*Linn. sp.* 1. *p.* 324; *Engl. bot. t.* 356; *Michx. fl.* 1. *p.* 194; *Pursh, fl.* 1. *p.* 235; *Ell. sk.* 1. *p.* 403; *Bigel. fl. Bost. p.* 137; *Torr. fl.* 1. *p.* 359; *Beck, bot., p.* 381; *Darlingt. fl. Cest. p.* 226; *Kunth, enum.* 3. *p.* 87.

Rhizoma branching horizontally, aromatic. Leaves 2 – 3 feet long and 6 – 8 lines wide. Scape resembling the leaves, acute on the outer edge, the inner channelled. Spadix sessile, $1\frac{1}{2}$ – 3 inches long, yellowish-green, thickly covered with small flowers in a tessellated manner. Sepals oblong, thickened at the apex. Capsules 2 – 3-celled, with several seeds in each cell.

Wet meadows, and on the borders of rivulets and ponds: frequent. *Fl.* June. *Fr.* August. A well known medicinal plant; common to Europe and America. It is easily distinguished from *Typha* (even when not in flower) by its aromatic odor.

ORDER CVII. LEMNACEÆ. *Duby.* THE DUCKWEED TRIBE.

Flowers monœcious, two (rarely one) sterile and one fertile, produced from the margin of a flat frond, and bursting through a membranous urceolate spathe, without envelopes; the sterile consisting of one or two stamens: the fertile of a one-celled ovary, which contains one or several amphitropous or orthotropous ovules. Fruit an utricle. — Minute floating plants. Fronds destitute of proper stem and leaves, and chiefly increasing by lateral offsets, with roots suspended from the bottom of the frond, which are furnished with a calyptra or sheath-like appendage at the extremity.

The plants of this order are generally regarded as a kind of reduced ARACEÆ.

1. LEMNA. *Linn.; Endl. gen.* 1668. DUCK'S-MEAT.

[*Lemna* is the Greek name of these little floating plants.]

Sterile flowers two in each spathe: filaments longer than the style, curved. Style usually elongated. — In other respects the character is that of the order.

1. LEMNA MINOR, *Linn.* *Lesser Duckweed,* or *Duckmeat.*

Fronds obovate, roundish, thickish; roots solitary. — *Engl. bot. t.* 1095; *Linn. sp.* 2. *p.* 970; *Michx. fl.* 2. *p.* 163; *Pursh, fl.* 1. *p.* 22; *Hook. fl. Lond. t.* 120; *Ell. sk.* 2. *p.* 518; *Torr. fl.* 1. *p.* 31; *Bigel. fl. Bost. p.* 334; *Brongn. in Guill. arch.* 2. *p.* 98. *t.* 12. *f.* 1; *Schleid. in Linnæa,* 13. *p.* 390; *Beck, bot. p.* 383; *Darlingt. fl. Cest. p.* 9; *Kunth, enum.* 3. *p.* 4.

Fronds about 2 lines long, often several in a cluster, throwing down from the centre of each disk underneath a long slender root which consists of a single fibre. Flowers not seen. In the European plant the seeds are amphitropous and horizontal.

Stagnant waters, covering the surface with a green mantle. I have no North American specimens of this plant in flower, and it is therefore still uncertain whether it is the true *L. minor.* According to Hooker, the young fronds constitute the *L. arrhiza* of French botanists.

2. LEMNA PERPUSILLA. *Smallest Duckweed.*

Fronds obovate, thin; roots solitary; seed erect.

Root a long solitary fibre. Fronds a line or a line and a half long, bright green on both sides, grouped or single. Flowers bursting from a cleft in the side of the frond; the spathe cyathiform. Stamens one or two in each spathe, arriving at maturity in succession; the filaments filiform. Ovary roundish-ovoid, gibbous, obliquely acuminate, with a short style which terminates in a simple stigma. Ovule single, anatropous, sessile at the base of the ovary. Seed oblong, a little compressed, striate, erect; the testa thick.

Ponds on Staten Island. *Fl.* and *Fr.* August. This species is much smaller than the usual state of *L. minor*, and differs essentially in the ovary and fruit. It seems to connect the genus *Wolfia* with *Lemna*.

3. LEMNA TRISULCA, *Linn.* *Star Duckweed.*

Fronds oblong-lanceolate, stipitate, thin, denticulate at the tip; roots solitary.—*Linn. sp.* 2. *p.* 970; *Engl. bot. t.* 926; *Hook. fl. Lond. t.* 119; *Muhl. cat. p.* 86; *Torr. fl.* 1. *p.* 30; *Beck, bot. p.* 383; *Darlingt. fl. Cest. p.* 9; *Schleid. in Linn. l. c. p.* 393; *Kunth, enum.* 3. *p.* 5.

Fronds half an inch to three-fourths of an inch long, membranaceous, translucent, attenuated at the base into a stipe or tail, proliferous from the sides near the middle, at right angles to the primary frond, and thus appearing cruciate. Flowers not seen.

Ponds and stagnant waters. The flowers seem to be produced very seldom, and are very little known even to European botanists.

4. LEMNA GIBBA, *Linn.* *Gibbous Duckweed.*

Frond obovate, nearly flat above, hemispherical underneath.—*Linn. sp.* 2. *p.* 970; *Pursh, fl.* 1. *p.* 22; *Torr. fl.* 1. *p.* 31; *L. C. Rich. in Guill. arch.* 1. *p.* 200. *t.* 6; *Brongn. l. c.* 1. *p.* 99. *t.* 12. *f.* 2; *Wils. in Hook. bot. misc.* 1. *p.* 145; *Beck, bot. p.* 383. Telmatophace gibba, *Schleid. in Linnæa*, 13. *p.* 391; *Kunth, enum.* 3. *p.* 6.

"Fronds tumid and spongy underneath, each with a single root. Spathe very short. Stamens 2; the filaments curved: anthers didymous; the cells subglobose. Ovary roundish, one-celled: style about the length of the ovary: stigma concave, simple. Ovules several, erect, anatropous. Fruit roundish, indehiscent, somewhat compressed. Seeds 1 – 5, ovoid; testa coriaceous, costate." *L. C. Richard.*

Stagnant waters near Liverpool, Onondaga county: found in flower (*Pursh*). Braddock's Bay, Lake Ontario: not in flower.

5. LEMNA POLYRRHIZA, *Linn.* *Greater Duckweed.*

Fronds roundish-obovate, palmately veined, flat above, slightly convex underneath; roots numerous, fasciculate.—*Linn. sp.* 2. *p.* 970; *Pursh, fl.* 1. *p.* 22; *Engl. bot. t.* 2458; *Ell. sk.* 2. *p.* 519; *Torr. fl.* 1. *p.* 31; *Beck, bot. p.* 383; *Darlingt. fl. Cest. p.* 9. Spirodela polyrrhiza, *Schleid. l. c. p.* 392; *Kunth, enum.* 3. *p.* 7.

Fronds 3 – 4 lines long, succulent, throwing down a tuft of roots from near the centre; the under surface often dark purple. "Stamens 2. Ovary with 2 erect anatropous ovules." *Schleiden.*

Stagnant waters: much less common than *L. minor*. Never yet found in flower in North America.

Order CVIII. TYPHACEÆ. *Juss.* The Cat-tail Tribe.

Flowers in dense spikes or heads, monœcious, without a perianth, but intermixed with scales or bristles. Stamens numerous; the filaments distinct, or united below: anthers erect, 2-celled. Ovary 1-celled, with a single suspended anatropous ovule: style simple: stigma lanceolate, unilateral. Fruit dry and indehiscent. Seed with a thin membranaceous testa: embryo straight, in the axis of fleshy albumen.— Aquatic or marsh plants, with alternate linear entire leaves, the bases of which at first sheathe the inflorescence like a spathe.

1. TYPHA. *Linn.; L. C. Rich. in Guill. arch. de bot.* 1. *p.* 193 *t.* 5; *Endl. gen.* 1709.

CAT-TAIL. REED-MACE.

[*Typhos* is the Greek name for a bog-marsh.]

Flowers in a long dense cylindrical spike. Sterile fl. above naked: stamens numerous, intermixed with simple hairs, inserted directly on the rachis or axis; the filaments slender, simple, or 2 – 3 – 4-forked at the summit. Fertile fl. on the same axis with the sterile, and immediately below them, or with a naked part of the axis between. Ovaries numerous, either seated immediately on the rachis, or several together on little processes of the same, surrounded with numerous clavate bristles. Fruit oblong, very small, stipitate. — Marsh plants, with a thick creeping rhizoma, and simple, cylindrical, culm-like stalks which are destitute of joints. Leaves erect, very long.

1. Typha latifolia, *Linn.* *Broad-leaved Cat-tail. Reed-mace.*

Leaves somewhat cuneiform, nearly flat; sterile and fertile spikes closely approximated. — *Linn. sp.* 2. *p.* 971; *Engl. bot. t.* 1455; *Pursh, fl.* 1. *p.* 34; *Ell. sk.* 2. *p.* 520; *Bigel. fl. Bost. p.* 339; *Torr. compend. p.* 333; *L. C. Rich. l. c.*; *Beck, bot. p.* 380; *Darlingt. fl. Cest. p.* 519; *Kunth, enum.* 3. *p.* 90.

Stems clustered, 4 – 5 feet high, leafy at the base. Leaves about three-fourths of an inch wide. Inflorescence consisting of two closely approximated spikes or spadices on the upper part of one scape; the flowers of both kinds innumerable. Sterile spike appearing shaggy from the projecting stamens. Anthers linear, yellowish-brown. Fertile spike 6 – 8 lines in diameter, of a brownish color, very dense.

Borders of ponds and swamps: common. *Fl.* June – July. *Fr.* September. The leaves are used for making the bottoms of chairs, but not so frequently as those of the *Scirpus triqueter;* and also by coopers, who place them between the staves of casks to prevent leakage. The hairs of the fruit are also employed as a substitute for feathers in beds, but they are heavy, and soon lose their elasticity. The plant is found in most parts of the world.

2. TYPHA ANGUSTIFOLIA, *Linn.* *Narrow-leaved Cat-tail.*

Leaves flat above, channelled toward the base; staminate and pistillate distant. — *Linn. sp.* 2. *p.* 971; *Engl. bot. t.* 1456; *Pursh, fl.* 1. *p.* 34; *Bigel. fl. Bost. p.* 340; *Torr. compend. p.* 323; *Beck, bot. p.* 380; *Darlingt. fl. Cest. p.* 520; *Kunth, syn.* 3. 91.

Stems and spikes much more slender, and the leaves narrower than in the preceding species; the naked space between the two spikes varying from 2 inches to about half an inch.

Borders of ponds and swamps. *Fl.* June. *Fr.* September. Richard (*l. c.*) remarks, that he has found, in the same swamps, and side by side, specimens that seemed to connect these two species of *Typha;* some of them having narrow leaves with the spikes close together, and others broad leaves with the spikes separated. I have also found similar intermediate forms in New-York. As to the flowering of the two species, there seems to be no essential difference.

2. SPARGANIUM. *Tourn.; Mirb. in ann. du mus.* 16. *t.* 18; *Endl. gen.* 1710.

BUR-REED.

[From the Greek, *sparganon*, a fillet or band; in allusion to its narrow leaves.]

Flowers in dense globose heads, intermixed with membranaceous scales (abortive stamens ?); the upper ones sterile, and the lower fertile. Stamens numerous; the accompanying scales irregularly disposed: filaments slender: anthers oblong or linear-oblong, 2-celled. Pistils numerous, sessile, each surrounded with 3 – 6 scales which resemble a perianth: style short: stigma linear-lanceolate, unilateral. Fruit sessile.—Marsh plants, with fibrous roots. Stem simple, or branched above. Heads arranged at intervals on the simple or branching summit of the stem or rachis.

1. SPARGANIUM RAMOSUM, *Huds.* *Branching Bur-reed.*

Stem erect, branching above; leaves triangular at the base, the sides concave; stigma linear; scales of the fertile heads thickened and dilated at the summit. — *Huds. fl. Angl. p.* 401; *Engl. bot. t.* 745; *Pursh, fl.* 1. *p.* 33; *Nutt. gen.* 2. *p.* 203; *Bigel. fl. Bost. p.* 339; *Torr. compend. p.* 333; *Beck, bot. p.* 379; *Kunth, enum.* 3. *p.* 89. S. erectum, *Linn. sp.* (ed. 2.) 2. *p.* 1378.

Stem erect, 1½ – 2 feet high, terete, dividing above into several flowering branches which are a little flexuous at the divisions. Leaves 12 – 18 inches long and 4 – 6 lines wide, several at the root and lower part of the stem, and one below each of the principal heads, which are of the nature of spathes. Heads sessile, alternate, consisting of numerous naked flowers mixed with scales, and clustered on a small roundish receptacle; the sterile ones smaller and more numerous than the fertile. Filaments long and capillary: anthers linear-oblong. Scales of the sterile heads cuneate-obovate; of the fertile dilated at the summit, and thickened in the middle. Stigmas often 2, longer than the style.

Ditches and borders of swamps: common. *Fl.* July. *Fr.* September. Our plant is not usually so much branched as the European.

2. SPARGANIUM SIMPLEX, *Huds.* *Smaller Bur-reed.*

Stem erect, simple or nearly so; leaves triangular at the base, the sides flat; stigma linear; scales of the fertile heads not dilated at the summit. — *Huds. fl. Angl. p.* 401; *Engl. bot. t.* 745; *Pursh, fl.* 1. *p.* 34; *Hook. fl. Bor.-Am.* 2. *p.* 169; *Kunth, enum.* 3. *p.* 89. S. erectum, *β. Linn. sp.* (ed. 2.) *p.* 1378. S. Americanum, *Nutt. gen.* 2. *p.* 203; *Beck, bot. p.* 380; *Darlingt. fl. Cest. p.* 520; *Kunth, l. c.*

var.? *angustifolium:* leaves very narrow, floating; scales of the fertile heads dilated at the summit. S. angustifolium, *Michx. fl.* 2. *p.* 189; *Bigel. fl. Bost. p.* 339? S. natans, *β.* angustifolium, *Pursh, fl.* 2. *p.* 34; *Kunth, enum.* 3. *p.* 89. S. natans, *Beck, bot. p.* 380; *Hook. fl. Bor.-Am.* 2. *p.* 169?

Stem 9 – 18 inches long, slender, mostly simple, but sometimes a little branched. Leaves 2 – 4 lines wide (narrowest in the floating variety), the lower ones considerably overtopping the stem. Fertile heads usually 2, sometimes 3 or only one: scales scarious, oblong, in *β.* dilated at the summit. Style shorter than the narrow stigma. Fruit obovoid, acuminate with the persistent style, the upper part solid and corky, the lower part indurated and containing the seed. Embryo slender, in the axis of farinaceous albumen.

Ponds, lakes, and slow-flowing streams, in the interior of the State, particularly in the western counties. July – August.

The plant which is considered by most of our botanists as *S. simplex*, is the *S. Americanum* of Nuttall, but I have not been able to find characters that will distinguish ours from the European species. I am also in doubt, for want of sufficient materials, what dependence is to be placed on the form of the floral scales as a mark of distinction. The floating form of the plant seems to be a mere variety, but it may prove to be identical with *S. natans* of Europe. It is not probable *S. angustifolium* of R. Brown is the same species as Michaux's.

ORDER CIX. NAJADACEÆ. *Juss.* THE PONDWEED TRIBE.

Flowers usually diclinous, sometimes perfect, naked, or rarely furnished with a regular perianth. Ovaries superior, 1 – 4 distinct: stigma simple or peltate. Ovule solitary, suspended, orthotropous (very rarely erect and anatropous). Fruit a little nut or indehiscent capsule. Seed with a very thin membranaceous testa, destitute of albumen. — Aquatic plants, with simple cellular leaves and sheathing spathe-like stipules. Flowers inconspicuous, often in spikes or on a kind of spadix, sometimes axillary.

CONSPECTUS OF THE GENERA.

1. NAJAS. Flowers dicœcious, mostly solitary, axillary, naked: the sterile consisting of a solitary stamen; the fertile of a pistil containing a single ovule. Style short: stigmas 2 – 3 or rarely 4, subulate.
2. ZOSTERA. Flowers monœcious, naked, in two rows on a linear spadix. Style single: stigmas 2.
3. RUPPIA. Flowers perfect, 2 or several on a spadix, naked, with 4 stamens and 4 ovaries; the latter at first sessile, but in fruit on long pedicels.
4. ZANNICHELLIA. Flowers monœcious, naked, axillary: the sterile solitary, or consisting of a single stamen; the fertile 2 – 6 from a short cup-like sheath, nearly sessile: stigma peltate.
5. POTAMOGETON. Flowers perfect, sessile, in spikes. Perianth of 4 scales. Stigma simple. Pistils 4, which become 4 small nuts.

1. NAJAS. *Linn.; Kunth, enum. 3. p. 111.* *WATER-NYMPH.*

[So named from the Latin, *nais*, a water nymph; in allusion to its place of growth.]

Flowers dicœcious, naked; the staminate reduced to a single stamen, each included in a calyptriform spatha: anthers at first nearly sessile, but the filament is elongated after flowering, either 4-celled and bursting at the summit by 4 revolute valves, or 1 – 2-celled: pollen globose. Fertile flowers reduced to a single pistil, without a spatha. Ovary sessile: ovule erect, anatropous: style short: stigmas 2 – 3, subulate. Fruit drupaceous, a little nut enclosed in a loose epicarp, the shell crustaceous. Seed conformed to the nucule, straight, the radicular extremity inferior.—Submersed aquatic herbs, with slender branching stems, and ternate or opposite sessile leaves which are dilated and sheathing at the base. Flowers axillary, mostly solitary, inconspicuous.

1. NAJAS CANADENSIS, *Michx.* *Canadian Water-nymph.*

Leaves narrowly linear, membranaceous, fasciculate in the axils, one-nerved, remotely and minutely spinulose-denticulate or entire; sheaths denticulate; style unequally 4-cleft; nut elliptical-fusiform, thin and crustaceous. — *Michx. fl. 2. p. 220; Pursh, fl. 2. p. 620; Hook. fl. Bor.-Am. 2. p. 170. t. 184; Kunth, enum. 3. p. 115.* Caulinia flexilis, *Willd. in act. acad. Berol. 1798, p. 89. t. 1. f. 1; Pursh, l. c. 1. p. 2; Muhl. cat. p. 86; Torr. compend. p. 330; Ell. sk. 2. p. 515; Beck, bot. p. 114; Kunth, l. c.* (in part).

Annual? Stem 6 – 18 inches long, much branched in a dichotomous manner. Leaves opposite, but appearing verticillate from the short leafy branches in the axils, half an inch to an inch long and scarcely a line wide, marked with an indistinct midrib, the margin (particularly towards the apex) very finely denticulate, spreading and more or less recurved. Sterile flowers not seen. Fertile flowers sessile in the axils, solitary, but sometimes several approximated, lanceolate, tapering to the summit, and ending in 4 subulate unequal stigmas: ovule arising from the base, sessile. Fruit apparently an utricle, containing a narrow smooth seed; but, according to most authors, the latter is a nucule, the endocarp of which has separated at an early stage from the membranaceous epicarp: shell (testa?) pale brown, slightly pointed

at each end. Testa (or rather tegmen?) very thin. Embryo a fleshy mass entirely filling the shell, the lower end the radicular.

Ponds and slowly flowing waters : common. July – September.

Willdenow separated from *Najas* several species, of which he formed his genus *Caulinia*, and some distinguished botanists have adopted it ; but R. Brown and Kunth have reunited the two genera. I have but once seen what I take to be the staminate flowers of the American plant, but have not had an opportunity of examining those of any foreign species of *Najas*. In *Caulinia*, according to Endlicher, the ovary is invested with an adherent cellular tunic, which is not the case in *Najas*. If there is such a tunic in *N. Canadensis*, perhaps the two longer and exterior of the subulate bodies that I have considered divisions of the style, belong to it, while the shorter ones (which have certainly a more stigmatose look than the others) are the real styles or stigmas.

2. ZOSTERA. *Linn. ; Endl. gen.* 1659. *GRASS-WRACK.*

[From the Greek word *zoster*, signifying a girdle or ribbon, which the leaves somewhat resemble.]

Flowers monœcious or diœcious, naked and without bracts, seated in two rows on the side of a flat spadix. Anthers ovate, sessile, opening longitudinally ; the pollen confervoid. Pistils alternating with the anthers, ovate : style subulate : stigmas 2, capillary. Ovule pendulous, orthotropous. Utricle membranaceous, bursting irregularly. Seed pendulous, globose.— A marine submersed herb, with a jointed creeping rhizoma, and very long linear and narrow leaves. Spadix arising from a sheathing base of the leaf.

1. ZOSTERA MARINA, *Linn.* *Eel-grass. Common Grass-wrack.*

Leaves somewhat 3-nerved, entire ; stem roundish. — *Linn. sp.* 2. *p.* 968 ; *Engl. bot. t.* 467 ; *Pursh, fl.* 1. *p.* 2 ; *Ell. sk.* 2. *p.* 514 ; *Bigel. fl. Bost. p.* 334 ; *Torr. compend. p.* 330 ; *Beck, bot. p.* 384 ; *Kunth, enum.* 3. *p.* 116.

Perennial. Stems rooting at the joints. Leaves 1 – 2 feet or more in length and usually about two lines wide, rather obtuse, membranaceous. " Spadix linear, arising from a sheathing portion of the leaf, which thus forms the spathe. Flowers green. Pistils and anthers alternate ; generally 2 anthers and then one pistil, both ovate or oblong-ovate." *Hooker.*

Saltwater bays, and thrown upon the seashore in great abundance during storms. I have never found it in flower. In Europe it is employed for packing bottles and earthenware, as well as for mattrasses.

3. RUPPIA. *Linn.; Endl. gen.* 1661. *DITCH-GRASS.*

[Named in honor of HENRY BERNARD RUPPIUS, a German botanist.]

Flowers perfect, 2 or more on a spadix, naked. Stamens 2, opposite : anthers large, peltate, clasping the spadix, 2-celled ; the cells parallel, disjointed, opening horizontally by two valves : pollen elongated, curved, with three protuberances. Ovaries mostly 4, at first sessile, stipitate in fruit : stigma sessile, peltate. Ovule pendulous, campulitropous. Fruit drupaceous, on long pedicels, obliquely ovoid, more or less beaked ; the endocarp thin and crustaceous. — A floating herb, growing in salt or brackish water, with slender branching stems and linear entire leaves. Flowers on a spadix, which is at first short and included in the sheathing spathe-like base of a leaf, but finally becomes much elongated.

1. RUPPIA MARITIMA, *Linn.* *Ditch-grass.*

Linn. sp. 1. *p.* 127 ; *Hook. in fl. Lond. t.* 50 ; *Michx. fl.* 1. *p.* 102 ; *Pursh, fl.* 1. *p.* 121 ; *Ell. sk.* 1. *p.* 581 ; *Bigel. fl. Bost. p.* 64 ; *Torr. compend. p.* 89 ; *Beck, bot. p.* 385 ; *Hook. fl. Bor.-Am.* 2. *p.* 170 ; *Kunth, enum.* 3. *p.* 123.

Perennial. Stems of variable length. Leaves linear-setaceous, alternate, 1 – 3 inches long, much dilated and sheathing at the base. Spadix included in the transparent sheath, at first sessile, but in fruit elevated on a filiform peduncle which is from 2 – 6 inches long. Flowers 2 on each spadix, consisting of 2 sessile anthers each of which is 2-celled, or, according to others, of 4 one-celled anthers, surrounding 4 minute sessile ovaries. Anther-cells roundish, opening transversely by 2 hemispherical valves. Ovaries very minute, usually 4, but sometimes 3 or 5. After flowering, the base of the spadix elongates, and supports the fruit on slender pedicels. Drupes olive-green, smooth, acuminate with a short oblique beak. Epicarp thick and crustaceous, black.

In saltwater bays and ditches : common in the neighborhood of New-York and on Long Island. June – August.

4. ZANNICHELLIA. *Michx.; Endl. gen.* 1662. *HORNED PONDWEED.*

[In honor of JOHN JEROME ZANNICHELLI, a Venetian botanist.]

Flowers monœcious, naked, without bracts. Sterile flowers consisting of a single stamen : filament slender : anther of 2 oblong parallel cells ; the connective produced at the summit. Fertile flowers consisting of 2 – 4 sessile pistils, arising from a cupshaped sheath, tapering upward into a short style : stigma large and disk-form. Ovule pendulous, orthotropous. Fruit on a short stipe, obliquely oblong, rostrate, somewhat coriaceous. — A submersed aquatic herb, with a branching slender stem, narrow linear entire leaves, and solitary axillary flowers.

1. ZANNICHELLIA PALUSTRIS, *Linn.* *Horned Pondweed.*

Linn. sp. 2. *p.* 969; *Engl. bot. t.* 1844: *Pursh, fl.* 1. *p.* 4; *Muhl. cat. p.* 86; *Torr. compend. p.* 330; *Beck, bot. p.* 384; *Hook. fl. Bor.-Am.* 2. *p.* 170; *Kunth, enum.* 3. *p.* 124. Z. intermedia, *Torr. l. c.*; *Beck, l. c.*

Annual. Stem submerged, filiform, much branched. Leaves 1 – 2 inches long, extremely narrow, entire. Flowers monœcious, usually both kinds from one axil. Stamen longer than the pistils; the filament slender: anthers large, 2-celled; the connective produced beyond the cells into a short point. Ovaries usually 4, but sometimes 2, 3 or 5, arising from a membranaceous cupshaped involucre, which is 2-lobed at the orifice: stigmas excentrically peltate, obliquely inserted on the style, repandly toothed or entire. Fruit a little incurved; the sides compressed, mostly entire, but sometimes a little toothed on the back; the persistent style or beak variable in length, sometimes as long as the fruit, at other times much shorter: epicarp membranaceous: endocarp coriaceo-crustaceous, thin. Seed oblong, cylindrical: integument simple, membranaceous. Embryo with the radicular extremity inferior and somewhat bulbous; the upper extremity (cotyledonous) tapering to a long point, and circinately involute.

Ponds and slow-flowing waters, often in those which are brackish. Staten Island, &c. Near Penn-Yan (*Dr. Sartwell*). Lake Champlain (*Mr. Oakes*). *Fl.* July – August.

5. POTAMOGETON. *Linn.; Endl. gen.* 1664. *PONDWEED.*

[From the Greek words *potamos*, a river, and *geiton*, a neighbor; in allusion to its place of growth.]

Flowers perfect. Perianth 4-leaved; the æstivation valvate. Sepals unguiculate. Stamens 4: filaments short: anthers 2-celled, opening longitudinally. Pistils 4, sessile, convex on the back: style short or none: stigma simple: ovule ascending. Nucules 4, compressed, tricarinate; the shell coriaceous or ligneous. Seed curved, with a thin testa. — Aquatic herbs; the leaves submerged, or the upper ones floating, distichous, alternate or rarely opposite, membranaceous. Flowers in pedunculate axillary or terminal spikes.

§ 1. *Stipules connate, free from the petiole.*

* *Upper leaves floating, broader than the submersed ones.*

1. POTAMOGETON NATANS, *Linn.* *Broad-leaved Floating Pondweed.*

Stem simple; leaves on long petioles, many-nerved; the floating ones (large) ovate or oblong, coriaceous, obtuse or somewhat cordate at the base; the submersed ones linear or lanceolate, membranaceous (often wanting); fruit keeled. — *Linn. sp.* 1. *p.* 126; *Engl. bot. t.* 1822; *Michx. fl.* 1. *p.* 101; *Pursh, fl.* 1. *p.* 120; *Bigel. fl. Bost. p.* 63; *Torr. fl.* 1.

p. 196; *Cham. & Schlecht. in Linnæa*, 2. *p.* 217; *Beck, bot. p.* 385; *Kunth, enum.* 3. *p.* 127.

var. *fluitans:* floating leaves elliptical or elliptical-lanceolate, coriaceous, tapering at the base, longer than the petiole; submersed ones very thin, membranaceous and sessile, linear, with many narrow reticulations along the midrib. — P. fluitans, *Pursh, fl.* 1. *p.* 120; *Ell. sk.* 2. *p.* 221; *Bigel. fl. Bost. p.* 63; *Torr. fl.* 1. *p.* 196; *Beck, bot. p.* 385. P. rufescens, *Hook. fl. Bor.-Am.* 2. *p.* 172.

Perennial. Stem varying in length according to the depth of the water. Floating leaves variable in size and form, but usually from 2 – 3 inches long and 1 – 2 inches broad; in the proper *P. natans*, mostly obtuse at the base and often cordate; but in the variety rather acute or tapering at the base, marked with numerous parallel veins which extend from the base to the apex, acute or obtuse, mostly of a firm texture and opake: submerged leaves much narrower and thinner than the floating ones, sometimes altogether wanting; the reticulations along each side of the midrib elongated, particularly in the var. *fluitans*. Stipules conspicuous, ovate or lanceolate, acute. Peduncles sheathed at the base by the stipules, longer or shorter than the leaves, often stouter than the stem. Spike about an inch long, closely covered with flowers. Sepals roundish. Fruit laterally compressed, slightly margined on the back; the longitudinal section, as in most of the species, exhibiting the appearance of the human ear in miniature.

Slow streams and ponds: frequent. *Fl.* July. *Fr.* August – September.

The plant which is called by most of our botanists *P. fluitans*, I have little doubt is only a variety of *P. natans*. It is perhaps also *P. rufescens* of Schreb. & Chamisso. The species of this section are extremely difficult to characterize, and it is possible that most of them are states of *P. natans*.

2. POTAMOGETON HETEROPHYLLUS, *Schreb.?* *Various-leaved Pondweed.*

Stem branching; floating leaves elliptical, on long petioles, slightly coriaceous, many-nerved, rather obtuse at the base; submerged ones lanceolate, very thin, obscurely 5-nerved, without linear reticulations along the midrib; peduncles much thicker than the stem, somewhat swollen upward; spikes cylindrical, dense. — *Hook. fl. Bor.-Am.* 2. *p.* 172? P. Proteus, *var.* heterophyllus, *Cham. & Schlecht. l. c.?*

Stem usually slender, more or less branching. Floating leaves (sometimes wanting), 1 – 1¾ inch long and 4 – 5 lines wide, acute, rather obtuse at the base; the petioles about the length of the lamina: submerged leaves 1 – 2 inches long, variable in breadth, but always more or less lanceolate; the linear reticulations along the midrib either wanting, or minute and obscure. Spikes about an inch long, thick, mostly shorter than the leaves. Fruit roundish-ovoid, compressed, slightly crested on the back.

Slow streams and lakes: rather frequent, particularly in the western part of the State. *Fl.* July. *Fr.* August.

3. POTAMOGETON HYBRIDUS, *Michx.* *Small Floating Pondweed.*

Stem sparingly branched, filiform; floating leaves (small) oval, coriaceous, petiolate, 5 – 7-nerved; submerged leaves setaceously linear; spikes short, dense; the peduncle thick and somewhat clavate; fruit crested, very obtuse, flat on the sides. — *Michx. fl.* 2. *p.* 101; *Cham. & Schlecht. l. c. p.* 208. *t.* 5. *f.* 17; *Kunth, enum.* 3. *p.* 132. P. diversifolium, *Bart. compend fl. Phil.* 1. *p.* 96. and *fl. Amer. Sept.* 3. *t.* 84; *Torr. fl.* 1. *p.* 197; *Hook. fl. Bor.-Am.* 2. *p.* 172. P. porcatum, *Muhl. cat. p.* 17? *P.* heterophyllum, *Pursh*, 1. *p.* 120; *Ell. sk.* 1. *p.* 222?; *Beck, bot. p.* 385, not of *Willd.*

A slender neat species. Floating leaves from three-fourths to an inch in length, distinctly 7-nerved, rather obtuse; the petiole shorter than the lamina: submerged leaves scarcely a line wide, 1 – 2 inches long, 1-nerved, veinless, without linear reticulations. Stipule lanceolate. Spikes about one-third of an inch long, on short thick peduncles. Fruit minute, roundish-truncate, keeled and somewhat winged on the back. Seed cochleate, forming nearly two complete turns.

Shallow slow streams: frequent. *Fl.* July. *Fr.* August. This species resembles *P. natans* in miniature. The fruit differs from that of most other species: a cross section of it exhibits three portions of the seed.

** *Leaves all submerged and similar (the upper ones sometimes petiolate), membranaceous and pellucid, reticulately nerved.*

4. POTAMOGETON LUCENS, *Linn.* *Shining Pondweed.*

Leaves elliptical and elliptical-lanceolate; the upper ones sometimes petiolate, mucronate, coarsely reticulated, the nerves arising from the midrib; spikes cylindrical, dense, supported on thick peduncles; fruit compressed, slightly carinate.—*Linn. sp.* 1. *p.* 126; *Michx. fl.* 2. *p.* 101; *Pursh, fl.* 1. *p.* 120; *Torr. fl.* 1. *p.* 197; *Bigel. fl. Bost. p.* 63; *Beck, bot. p.* 386; *Darlingt. fl. Cest. p.* 116; *Kunth, enum.* 3. *p.* 132. P. Proteus, *Cham. & Schlecht. l. c. p.* 196. *t.* 5. *f.* 16.

A polymorphous species. Stem a little branching, rather slender. Leaves usually all submersed, thin and shining, 2 – 4 inches long; the upper often abruptly narrowed at the base into a petiole, from three-quarters of an inch to more than an inch wide, mucronate and often acuminate, marked with 12 – 17 nerves which are connected by strong transverse veins: petiole half an inch to an inch long: submersed leaves lanceolate, sessile but attenuate at the base. Stipules elongated and narrow. Peduncles shorter, or sometimes much longer than the leaves, usually much stouter than the stem. Spikes about an inch long.

Small streams and outlets of lakes. *Fl.* August. *Fr.* September. The lower leaves are usually sessile and lanceolate or oblong-lanceolate, but often (in shallow water) they are petiolate; sometimes very large (5 – 6 inches long), at other times quite small. They are spreading or recurved. The margin is slightly rough.

5. POTAMOGETON PERFOLIATUS, *Linn.* *Perfoliate Pondweed.*

Stem somewhat branched; leaves all submersed, oblong-ovate, obtuse, somewhat cordate at the base, sessile and clasping, membranaceous and pellucid, a little rough on the margin; spikes oblong, few-flowered; fruit slightly keeled.—*Linn. sp.* 1. *p.* 126; *Michx. fl.* 2. *p.* 101; *Pursh, fl.* 1. *p.* 120; *Torr. fl.* 1. *p.* 197; *Bigel. fl. Bost. p.* 63; *Cham. & Schlecht. l. c. p.* 188. *t.* 5. *f.* 13; *Beck, bot. p.* 386; *Darlingt. fl. Cest. p.* 115; *Hook. fl. Bor.-Am.* 2. *p.* 172; *Kunth, syn.* 3. *p.* 133.

Stem slender, dichotomously branched. Leaves usually about an inch long, sometimes ovate-lanceolate and acute, slightly waved on the margin, obscurely marked with 5 – 7 larger and several intermediate nerves. Stipules membranaceous and pellucid like the leaves, often wanting. Peduncles stout, about an inch long. Fruit obliquely ovate, the sides compressed; the seed uncinately curved.

Ponds and streams: common. *Fl.* August. *Fr.* September.

**** Leaves all submersed and linear.*

6. POTAMOGETON ZOSTERIFOLIUS, *Schumach.* *Grass-leaved Pondweed.*

Stem flatly compressed, branching; leaves all linear and grass-like, pellucid, with three primary and many smaller nerves, acuminate; spikes cylindrical, on longish thick peduncles.—*Cham. & Schlecht. l. c. p.* 182. *t.* 4. *f.* 10; *Hook. fl. Bor.-Am.* 2. *p.* 172; *Kunth, enum.* 3. *p.* 134. P. compressum, *Torr. fl.* 1. *p.* 198. P. acutifolium, *H. H. Eat. in Trans. journ. med. March,* 1832, not of *Link.* P. Robbinsii, *Oakes in Hovey's mag. May,* 1841?

Stem almost winged, 2 – 4 feet long. Leaves 3 – 6 inches long and a line and a half or 2 lines wide, with a small abrupt acumination, marked with 3 pretty strong nerves besides many much finer ones, but with very obscure connecting veins. Stipules free. Spike 6 – 9 lines long, on short peduncles which vary from 1 – 2 inches in length. Fruit obovate, somewhat lenticular, apiculate at the summit; the keel obtuse.

In the Hudson river above the Highlands, and in the western part of the State. *Fl.* August. *Fr.* September.

7. POTAMOGETON PUSILLUS, *Linn.* *Small Pondweed.*

Stem somewhat compressed; leaves narrowly linear, 3 – 5-nerved, with distant and obscure connecting veins, rather obtuse, pellucid; spikes oblong, few-flowered, somewhat interrupted, much shorter than the peduncles.—*Linn. sp.* 1. *p.* 127; *Cham. & Schlecht. l. c. p.* 170. *t.* 4. *f.* 5; *Kunth, enum.* 3. *p.* 136.

Stem branching, slender, flexuous. Leaves 1 – 2 inches long, about a line and a half wide, mostly 5-nerved. Stipules membranaceous, large, obtuse, with a minute callosity or gland at the base on each side. Spikes about half an inch long, mostly 6-flowered. Peduncles an inch or more in length, thicker than the stem. "Fruit elliptical, oblique, the sides convex, apiculate, with a very short style: keel obtuse." *Cham. & Schlecht.*

Crooked lake (*Dr. Sartwell*). *Fl.* August. I have not seen the ripe fruit of this plant, but there can be little doubt of its being the *P. pusillus* of Chamisso and Schlechtendal, the var. A. (*l. c.*) agreeing very minutely with our specimens.

8. POTAMOGETON PAUCIFLORUS, *Pursh.* *Few-flowered Pondweed.*

Stem slender, much branched, compressed; leaves very narrow and linear, acute, membranaceous, 3-nerved without connecting veins; spikes capitate, few- (4 – 6-) flowered; fruit obovoid, convex on the side, apiculate at the summit, cristate on the back. — *Pursh, fl.* 1. *p.* 121; *Torr. fl.* 1. *p.* 98; *Bigel. fl. Bost. p.* 64; *Cham. & Schlecht. l. c. p.* 176. *t.* 4. *f.* 7; *Beck, bot. p.* 386; *Darlingt. fl. Cest. p.* 116; *Kunth, enum.* 3. *p.* 136. P. gramineum, *Michx. fl.* 1. *p.* 102.

A very slender species, wholly submersed; the stem almost filiform. Leaves 1 – 2 inches long, and rarely more than a line wide; the lateral nerves indistinct. Stipules membranaceous, obtuse or mucronulate, linear-oblong, furnished with a very minute gland on each side at the base. Spikes very short, seldom more than 6-flowered, on a clavate peduncle about half an inch long. Fruit rather large for the size of the plant, somewhat acuminate, distinctly crested on the back; the shell thick and hard.

Ponds, lakes and slow streams. August. Distinguished from the preceding by its smaller stems, narrower leaves, short capitate few-flowered spikes, and crested fruit.

§ 2. *Stipules adnate to the base of the leaves, which are all submerged and similar in form*

9. POTAMOGETON PECTINATUS, *Linn.* *Fennel-leaved Pondweed.*

Leaves setaceous-filiform, channelled, with a longitudinal cavity each side of the midrib; spikes on long peduncles, interrupted. — *Linn. sp.* 1. *p.* 127; *Pursh fl.* 1. *p.* 121; *Torr. fl.* 1. *p.* 198; *Cham. & Schlecht. l. c. p.* 164. *t.* 4. *f.* 2; *Beck, bot. p.* 386; *Kunth, enum.* 3. *p.* 137. P. marinum, *Linn. l. c.; Michx. fl.* 1. *p.* 102. P. exstipulatum, *Muhl. cat. p.* 17.

Stem filiform, much branched, dichotomous. Leaves distichous, very numerous, very slender, with a tube-like cavity running the whole length on each side of the midrib, attenuated to a fine point. Stipules membranaceous, adnate to the base of the leaf, and forming a sheath. Peduncles mostly elongated. Spike three-fourths of an inch to an inch long, with distinct intervals (which are sometimes considerable) between the clusters of flowers.

Saltwater ditches and shallow bays, near New-York, and on Long Island. Also in fresh water, near Watertown (*Dr. Gray*). *Fl.* August. *Fr.* October.

Group 2. *Flowers not arranged on a spadix, furnished with a double perianth consisting of calyx and corolla. Ovaries* 3 – 6 *or numerous, free, distinct or more or less united. — Herbs, growing in water or in swamps.*

Order CX. ALISMACEÆ. *L. C. Rich.* The Water-Plantain Tribe.

Flowers regular, perfect or polygamous, furnished with distinct calyx and corolla. Calyx of 3 sepals. Corolla 3-petalled. Stamens 6 – 12, or numerous : anthers in the perfect flowers introrse. Ovaries numerous or rarely few, one-celled, with one or rarely two campylotropous ovules in each : styles distinct, persistent. Carpels usually distinct and crowded in a head, or disposed in a circle, dry, 1-celled, indehiscent, mostly one-seeded. Embryo curved like a horseshoe, without albumen. — Marsh or aquatic plants, with fasciculate roots. Leaves radical, with long petioles which are sheathed at the base, and a flat lamina.

1. ALISMA. *Linn.; Endl. gen.* 1041. *WATER PLANTAIN.*

[Said to be derived from the Celtic word *alis*, water; which is its place of growth.]

Flowers perfect. Sepals 3, green, persistent. Petals 3, deciduous; the æstivation involute. Stamens 6 (rarely more). Ovaries numerous, disposed in a circle, or crowded in a head: stigmas simple. Carpels distinct, mucronate or awned with the persistent style. — Marsh or aquatic plants, mostly stemless. Flowers pedicellate, usually in verticillate panicles or racemes, white or rose-colored.

1. Alisma Plantago, *Linn.* *Common Water Plantain.*

Stemless; leaves ovate or oblong, acute; stamens 6; scape many-flowered, with compound whorled branches; carpels 12 – 20, obliquely obovate, obtuse.—*Linn. sp.* 1. *p.* 342; *Michx. fl.* 1. *p.* 218; *Torr. fl.* 1. *p.* 381; *Bigel. fl. Bost. p.* 144; *Beck, bot. p.* 378; *Hook. fl. Bor.-Am.* 2. *p.* 68; *Kunth, enum.* 3. *p.* 148. A. trivialis & parviflora, *Pursh, fl.* 1. *p.* 252; *Ell. sk.* 1. *p.* 434. A. parviflora, *Kunth, l. c.*

Root fibrous, perennial. Leaves all radical, on long petioles, mostly ovate and more or less cordate at the base, 3 – 6 inches long, mostly 9-nerved; the petiole longer than the lamina. Scape 1 – 2 feet high, obtusely triangular, much branched in a verticillate manner, with small ovate acuminate bracts at the divisions. Calyx much smaller than the corolla; the sepals ovate. Petals orbicular, usually white, but sometimes pale rose-color. Stamens shorter than the corolla. Carpels arranged in a circle, and forming an obtusely triangular truncate head.

Borders of ponds, and overflowed miry places. *Fl.* July – August. *Fr.* September. Variable in size, and in the number of nerves in the leaves. I can discover no essential difference between the European plant and ours, though Pursh considered them distinct, and even made two distinct species of the latter.

2. SAGITTARIA. *Linn.; Endl. gen.* 1042. *ARROWHEAD.*

[From *sagitta*, the Latin for arrow; the leaves being mostly of that form.]

Flowers usually monœcious or polygamo-monœcious. Calyx of 3 persistent sepals. Petals 3, deciduous; the æstivation imbricate. Stamens numerous. Ovaries very numerous, crowded into a head, distinct, each with a single erect campulitropous ovule. Carpels compressed, rostrate with the short persistent style.— Marsh or aquatic plants, with radical petiolate and mostly sagittate or hastate leaves and a milky juice. Scapes many-flowered, with the flowers usually verticillate in threes; the staminate ones above.

1. SAGITTARIA SAGITTIFOLIA, *Linn.* *Common Arrowhead.*

Leaves sagittate, or sometimes entire; scape simple. — *Linn. sp.* 2. *p.* 993; *Hook. fl. Bor.-Am.* 2. *p.* 167.

var. 1. *vulgaris:* leaves ovate, acute or acuminate; the lobes ovate-lanceolate, straight, acuminate. — *Hook, l. c.* S. sagittifolia, *Michx. fl.* 2. *p.* 189; *Pursh, fl.* 2. *p.* 395; *Ell. sk.* 2. *p.* 589; *Bigel. fl. Bost. p.* 344; *Beck, bot. p.* 377; *Darlingt. fl. Cest. p.* 528.

var. 2. *latifolia:* leaves very large and broad, more or less obtuse; the lobes ovate-lanceolate and spreading. — *Torr. compend. p.* 355; *Beck, l. c.; Kunth, enum.* 3. *p.* 156. P. sagittifolia, *var.* macrophylla, *Hook, l. c.* S. latifolia, *Willd. sp.* 4. *p.* 408; *Pursh, fl.* 2. *p.* 396.

var. 3. *hastata:* leaves oblong-lanceolate, acute; the lobes divaricate, lanceolate, elongated; flowers mostly dicœcious. — *Torr. l. c.; Beck, l. c.; Kunth, l. c.* S. hastata, *Pursh, l. c.; Ell. l. c.*

var. 4. *gracilis:* leaves lanceolate-linear; the lobes much divaricate, linear, very long, acute, or sometimes wanting.—*Torr. l. c.; Beck, l. c.; Kunth, l. c.* S. gracilis, *Pursh, l. c.* S. heterophylla.

var. 5. *pubescens:* leaves and scape pubescent — *Torr. l. c.; Beck, l. c.; Darlingt. l. c.; Kunth, l. c.* S. pubescens, *Pursh, l. c.; Kunth, l. c.*

var. 6. *simplex:* leaves all with the lamina linear-lanceolate, and destitute of lobes. — *Hook. l. c.* S. simplex; S. graminea; *and* S. acutifolia, *Pursh, l. c.; Kunth, l. c.*

var. 7. *rigida:* leaves narrowly lanceolate, very acute at each end, carinate below. S. rigida, *Pursh, l. c.*

Root perennial, consisting of thick fibres, and producing oval fleshy tubers which abound in starch. Leaves extremely variable; the lamina being sometimes 8 – 10 inches long (including

the lobes), and 2 – 6 inches wide ; but in var. 4, much smaller : in 6th var. it is reduced to an undivided blade sometimes not more than 2 – 3 lines wide. Scape 6 inches high ; the flowers pedicellate, in whorls of 3 together. Pedicels bracteate at the base, from one-fourth of an inch to an inch or more in length. Petals orbicular, large and white, very thin and fugacious. Stamens very numerous. Ovaries crowded, in depressed globose heads.

Low watery places : common. *Fl.* July – August. *Fr.* September. I am convinced that all the above forms belong to one species, as they pass by insensible gradations into each other. The most remarkable variety is the one which I take to be *S. rigida* of Pursh. It grows in pretty deep water, but does not float. The whole plant, except the small blades of the leaves and the flowering part of the scape, is submerged. Nuttall seems to be the only botanist who has noticed the milky juice of Sagittaria. It exudes in small quantities when the leaves or tubers are wounded, and soon dries into a transparent gummy mass.

2. SAGITTARIA PUSILLA, *Nutt.* *Least Arrowhead.*

Leaves linear, short and obtuse, the lamina very small ; scape simple, few-flowered, monœcious, mostly shorter than the leaves ; fertile flower usually solitary. — *Nutt. gen.* 2. *p.* 213 ; *Torr. compend. p.* 356 ; *Kunth, enum.* 2. *p.* 160. S. subulata, *Bart. compend. fl. Phil.* 2. *p.* 166. Alisma subulata, *Linn. sp.* (ed. 2.) 1. *p.* 487 ; *Pursh, fl.* 1. *p.* 253.

Annual ? Leaves 1 – 3 inches high, and about a line wide ; the lamina consisting of a flattened portion of the summit, or sometimes wanting. Scape 1 – 2 inches high, often only 3 – 4-flowered ; the fertile flower usually solitary. Fruit not seen.

Muddy banks of the Hudson, where the water is a little brackish, as at West-Point and Peekskill. *Fl.* July – August. I am suspicious that this plant is only a very reduced form of *S. sagittifolia.*

SUBORDER JUNCAGINACEÆ. THE ARROW-GRASS TRIBE.

Flowers regular. Perianth single, consisting of 6 sepaloid leaflets ; the 3 inner ones narrower. Stamens 6, opposite the leaflets of the perianth. Ovaries 3 – 6, united around a central axis, or partly distinct, 1-celled, each with 1 or 2 erect or ascending anatropous ovules : stigmas plumose or papillose. Carpels more or less distinct, or united around an axis from which they separate at maturity, 1 – 2-seeded. Seeds erect, marked with a strong longitudinal raphe. Embryo straight. — Smooth marsh plants, with simple (usually scape-like) stems and narrow linear leaves. Flowers in spikes or racemes.

1. TRIGLOCHIN. *Linn.*; *Endl. gen.* 1039. *ARROWHEAD.*

[From the Greek, *treis*, three, and *glochis*, a point; the capsules being mostly 3 pointed.]

Perianth somewhat colored, deciduous. Stamens 6; anthers sessile, one under each concave leaf of the perianth, extrorse. Ovary of 3 – 6 united carpels, of which the alternate ones are sometimes abortive, and thus appearing 3 – 6-celled; the stigmas as numerous as the fertile cells. Ovules solitary, arising from the base of the cell. Fruit 3 – 6-coccous. — Marsh plants with scape-like stems. Leaves narrow, flattish or semiterete, sheathing at the base. Flowers small, in a terminal spike.

1. TRIGLOCHIN PALUSTRE, *Linn.* *Marsh Arrow-grass.*

Root somewhat fibrous; leaves semiterete, much shorter than the scape; fruit slender and clavate, tricoccous, carpels subulate at the base. — *Linn. sp.* 1. *p.* 338; *Engl. bot. t.* 366; *Pursh, fl.* 1. *p.* 247; *Nutt. gen.* 2. *p.* 237; *Torr. fl.* 1. *p.* 373; *Beck, bot. p.* 379; *Hook. fl. Bor.-Am.* 2. *p.* 168; *Kunth, enum.* 3. *p.* 143.

Root perennial? Leaves all radical or nearly so, very narrow, somewhat fleshy. Scape a foot or eighteen inches high, slender. Flowers in a long spike; the pedicels erect, filiform, 2 – 3 lines long, naked at the base. Fruit linear, attenuated below, crowned with three short recurved points, finally separating at the apex into 3 slender carpels, and suspended on a filiform axis.

Marshes around Onondaga lake (*Pursh*); near Niagara (*Mr. Cooper*); Junius, Seneca county (*Dr. Sartwell*); near Buffalo (*Dr. Kinnicutt*). *Fl.* August.

2. TRIGLOCHIN MARITIMUM, *Linn.* *Seaside Arrow-grass.*

Leaves semicylindrical, fleshy, shorter than the scape; fruit ovate, sulcate, of 6 united oblong carpels, the angles of which are not projecting. — *Linn. sp.* 1. *p.* 338; *Engl. bot. t.* 255; *Michx. fl.* 1. *p.* 208; *Pursh, fl.* 1. *p.* 247; *Torr. fl.* 1. *p.* 373; *Bigel. fl. Bost. p.* 142; *Beck, bot. p.* 379; *Hook. fl. Bor.-Am.* 2. *p.* 168; *Kunth, enum. p.* 145.

Root horizontal, perennial. Leaves radical, 6 – 12 inches long, rush-like, sheathing at the base. Scapes 12 – 18 inches high, stouter than in the preceding species. Flowers on pedicels 1 – 2 lines long, greenish. Fruit sometimes ovate, 6-pointed at the summit, consisting of six carpels united to a central axis, and not suspended from its summit.

Salt marshes on the Island of New-York, and on Long Island. Also about Salina (*Mr. Cooper*). *Fl.* July – August.

3. TRIGLOCHIN ELATUM, *Nutt.* *Tall Arrow-grass.*

Leaves semicylindrical, much shorter than the scape; fruit ovate; 4, 5 and 6 six carpels oblong-linear, deeply sulcate on the back, the margins prominent and acute. — *Nutt. gen.* 2. *p.* 237; *Kunth, enum.* 3. *p.* 145.

Root somewhat bulbous. Leaves all radical, very narrow. Scape 18 inches to 2 feet high, obscurely 3-sided. Spike elongated (in fruit nearly a foot long). Pedicels of the flowers about a line long. Fruit $2\frac{1}{2}$ lines long, obtuse at the base, sharply angular by the projecting edges of the carpels.

Freshwater swamps in the western part of this State. Near Bridgewater, &c. (*Dr. Gray*); Gorham (*Dr. Aikin*). *Fl.* June – July. *Fr.* August. I insert this species with considerable hesitation, as it does not appear to be very distinct from *T. maritimum.* In my undoubted specimens of the latter, however, found in salt marshes, the carpels are triangular, without projecting acute edges; but these characters may not be constant.

2. SCHEUCHZERIA. *Linn.; Endl. gen.* 1040. *SCHEUCHZERIA.*

[Named in memory of the two brothers SCHEUCHZER, Swiss botanists.]

Perianth of 6 regular somewhat petaloid persistent leaflets; the 3 interior narrower. Anthers on slender filaments, extrorse. Ovaries 3, each with 3 anatropous ascending ovules. Carpels 3 (rarely 4), one of them sometimes abortive, ovate, inflated, united at the base, diverging, 1 – 2-seeded. — A perennial smooth herb, with a creeping rhizoma, flexuous stem and linear leaves. Flowers in a loose raceme.

1. SCHEUCHZERIA PALUSTRIS, *Linn.* *Marsh Scheuchzeria.*

Linn. sp. 1. *p.* 338; *Engl. bot. t.* 1801; *Michx. fl.* 2. *p.* 209; *Pursh, fl.* 1. *p.* 247; *Nutt. gen.* 1. *p.* 236; *Torr. fl.* 1. *p.* 372; *Beck, bot. p.* 380; *Hook. fl. Bor.-Am.* 2. *p.* 168; *Kunth, enum.* 3. *p.* 146.

Rhizoma horizontal. Stem 8 – 12 inches high, erect, angular. Leaves somewhat distichous, sheathing at the base, linear and semiterete, with a small depression on the upper surface a little below the tip. Raceme few-flowered; the lower pedicels longest, subtended by sheathing leaves, which diminish upward into bracts. Perianth greenish yellow; the leaflets oblong. Stamens usually 6: filaments about as long as the large linear anthers. Ovaries obtuse, slightly united at the base. Carpels coriaceous, large. Seeds mostly 2, oblong, obtusely triangular, black.

Sphagnous swamps in the western and northern parts of the State: rare. *Fl.* July. *Fr.* August. The North American plant seems to be no way different from the European.

GROUP 3. *Flowers with a simple or double perianth, which coheres with the lower part, or with the whole surface of the ovary. — Herbs.*

ORDER CXI. HYDROCHARIDACEÆ. *Juss.* THE FROG'S-BIT TRIBE.

Flowers mostly diœcious. Perianth regular, 3 – 6-parted; the inner segments petaloid. Stamens 3 – 12. Ovary one-celled, with 3 – 6 parietal placentæ, or 6-celled: stigmas 3 – 6 or 9, entire or 2-cleft, usually large. Ovules anatropous or orthotropous. Fruit coriaceous or somewhat fleshy, indehiscent. Seeds numerous. Embryo straight, without albumen. — Aquatic herbs; the leaves mostly radical, sometimes opposite or verticillate.

CONSPECTUS OF THE GENERA.

1. HYDROCHARIS. Diœcious or monœcious. Stamens 9. Stigmas 6, each 2-horned. Capsule roundish, 6-celled.
2. UDORA. Polygamous. STER. FL. Stamens 9 – 12; 3 of them interior. PERFECT FL. Stamens 3 – 6. Tube of the perianth very long and filiform. Stigmas 3, 2-cleft. Fruit one-celled. — Leaves caulescent, verticillate.
3. VALISNERIA. Diœcious. Stamens 3, one of them often abortive. Stigmas 3, 2-cleft, seated on the summit of the ovary. Fruit one-celled. — Leaves radical.

1. HYDROCHARIS. *Linn.; Endl. gen.* 1216. *FROG'S-BIT.*

[From the Greek, *hydor*, water, and *charo*, to rejoice; because these plants live in the water.

Flowers diœcious or monœcious. STERILE. Spathe at the summit of a short scape, 2-leaved, about 3-flowered. Calyx deeply 3-parted; the segments oval. Corolla of 3 roundish petals. Stamens 9 – 12: filaments united into a column below. Rudimentary ovary 3-lobed. FERTILE. Spathe radical, one-leaved. Flower on a long peduncle. Calyx deeply 3-parted. Petals 3. Abortive stamens 6, subulate. Style very short, thick: stigmas 6, oblong-cuneate, divaricately 2-horned. Fruit ovoid, 6-celled. Seeds attached to the sides of the dissepiment. — Perennial herbs, with floating stolons, reniform or cordate petiolate leaves, and rather conspicuous white flowers.

1. HYDROCHARIS CORDIFOLIA, *Nutt.* *Heart-leaved Frog's-bit.*

"Monœcious" (*Nutt.*); leaves roundish-cordate; sterile flowers on long peduncles; fertile on short peduncles; anthers linear; stigmas 6 – 7, two-parted nearly to the base, the segments lanceolate-subulate. — *Nutt. gen.* 2. *p.* 241. H. spongiosa, *Bosc in ann. du mus.* 9. *p.* 396. *t.* 30; *Ell. sk.* 2. *p.* 714.

Perennial, producing stolons from which new plants arise. Roots fibrillose. Leaves

petiolate; the lamina 1 – 2 inches in diameter, with about 5 primary nerves which curve from the base towards the apex, and are connected by horizontal veins; the under surface often purplish, and the central part lacunose-reticulated, the sinus at the base deep or almost wanting. Spathes hyaline. Peduncle of the sterile flower about 3 inches long. Sepals oval, green. Stamens about 12: filaments united into a short thick column: anthers linear. Peduncle of the fertile flower an inch and a half long, thick. Ovary oblong: stigmas apparently 12 – 13, but rather 6 – 7, which are very deeply parted; the segments papillose-fibrillose. Ovules numerous, orthotropous.

Braddock's bay, near Lake Erie, Greece, Monroe county (*Dr. S. B. Bradley*). *Fl.* August. I have adopted Mr. Nuttall's name, because Bosc's is inappropriate. The description here given is taken from imperfect specimens sent by Dr. Bradley, and I have no better from any part of the country.

2. UDORA. *Nutt. gen.* 2. *p.* 242; *Endl. gen.* 1206. *UDORA.*

[From the Greek, *hydor*, or *udor*, water; its place of growth.]

Flowers polygamous (diœcious, *Nutt.*; perfect, *Endl.*), solitary, from a tubular bifid spathe. Perianth 6-parted, petaloid. STERILE FL. Stamens 9: anthers oval, nearly sessile. PERFECT FL. Tube of the perianth produced above the ovary into a very long slender tube. Stamens 3 – 6: filaments short, subulate: anthers oblong, innate; the cells parallel, distinct. Ovary oblong, one-celled, with 3 projecting parietal placentæ, which in the upper part meet in the centre: ovules orthotropous,* ascending. Style long and filiform, cohering with the tube of the perianth: stigmas 3, large, spreading, oblong-cuneiform, 2-lobed, papillose. Fruit (immature) oblong, coriaceous, few-seeded. Seeds elliptical, smooth. — A submersed aquatic, with verticillate serrulate leaves and minute flowers.

1. UDORA CANADENSIS, *Nutt.* (Plate CXXV.) *Little Water Snakeweed.*

Nutt. l. c.; Beck, bot. p. 342; *Darlingt. fl. Cest. p.* 570. U. verticillata, *Hook. fl. Bor.-Am.* 2. *p.* 193. Elodea Canadensis, *Michx. fl.* 1. *p.* 20; *Torr. compend. p.* 376. Serpicula verticillata, *Muhl. cat. p.* 84. S. occidentalis, *Pursh fl.* 1. *p.* 33.

Perennial? Stem dichotomously much branching, slender. Leaves usually verticillate in threes, sometimes in fours, or the lower ones opposite, varying from oblong-ovate to lanceolate-linear, acute or obtuse, finely serrulate, one-nerved. Flowers axillary; the sterile ones on a separate plant, minute, sessile, usually breaking off connection with the parent plant, when they float on the surface of the water, and the granular pollen escapes. These grains consist

* "Ovules anatropous," *Endl.*; but they are certainly orthotropous in our plant, and so they are clearly represented in the plate of the nearly allied *Lagarosiphon* of Harvey in *Hook. jour. bot. t.* 22, but which in the description (by inadvertence?) are called anatropous!

of 4 minute globules cohering together. Perfect flowers expanding on the surface, which they reach by means of their filiform perianth-tube, which varies in length according to the depth of the water, being sometimes a foot long. Spathe cleft about half way down; the segments acute. Lobes of the perianth roundish-obovate, spreading, the three inner ones less petaloid than the others. Stamens mostly 3, but varying to 5, 6 or more: anthers yellow, oblong, nearly sessile. Ovary oblong, attenuated upward; the 3 placentæ projecting, each bearing 2 – 3 ovoid ascending orthotropous ovules: stigmas usually three, spreading, purple, more or less deeply 2-lobed. Ripe fruit not seen.

Sluggish streams and shallow lakes: frequent. *Fl.* July and August. I have never been so fortunate as to detect the sterile flowers of this plant, and have described them from specimens communicated to me by Dr. Engelmann of St. Louis. I have found, near Princeton, New Jersey, the UDORA bearing flowers which presented a remarkable anomaly. The ovary appears of the ordinary form; but on laying it open, there are seen three and sometimes four bodies resembling styles, which originate at the base of the placentæ, and, after rising some distance, make a double curvature, and then terminate in a long papillose extremity, having every appearance of a stigma, the latter being lodged in the slender tubular portion of the ovary, just above the swollen base. These bodies (particularly the stigma-like portion) are of bright purple color. The placentæ bear ovules as usual, and at the summit of the flower there are the regular segments of the perianth, stamens, and 3 large purple 2-lobed stigmas as in the ordinary state of the plant.

3. VALISNERIA. *Michel.; Endl. gen.* 1209. *TAPE-GRASS.*

[In honor of ANTONIO VALISNERI, an Italian botanist.]

Diœcious. STERILE FL. Spathe on a short scape, 2 – 3-parted. Flowers numerous, nearly sessile, crowded on a conical receptacle. Perianth 3-parted. FERTILE FL. Scape very long, flexuous or spiral. Spathe tubular, 2-cleft, one-flowered. Perigonium 3-parted. Staminodia 3 (petals of most authors), linear, one of them often 2-cleft. Ovary linear, one-celled, with 3 parietal placentæ: stigmas 3, nearly sessile, ligulate, 2-lobed. Fruit elongated, cylindrical, crowned with the limb of the perianth. Seeds oblong-cylindrical.— Stemless water-plants, with long narrow linear leaves.

1. VALISNERIA SPIRALIS, *Linn.* *Tape-grass. Eel-grass.*

Leaves linear, obtuse, minutely serrulate. — *Linn. sp.* 2. *p.* 1015; *Hook. bot. misc. t.* 30 (fertile), & *t.* 33 (barren), and *fl. Bor.-Am.* 2. *p.* 192. V. Americana, *Michx. fl.* 2. *p.* 220; *Pursh, fl.* 2. *p.* 602; *Nutt. gen.* 2. *p.* 230; *Ell. sk.* 2. *p.* 666; *Bigel. fl. Bost. p.* 364. V. spiralis, *var.* Americana, *Torr. compend. p.* 365; *Beck, bot. p.* 342; *Darlingt. fl. Cest. p.* 557.

Plant rooting in the mud, and producing stolons. Leaves 1 – 2 feet or more in length and 2 – 5 lines wide, grass-like, membranaceous and deep green, obscurely 3-nerved. Sterile flowers scarcely larger than the anthers of the rose, at length breaking connection with the parent plant, rising to the surface, and, after floating around the fertile flower, quickly perish. Fertile flowers on slender peduncles which vary in length with the depth of the water, usually flexuous or spiral, rising to the surface of the water when ready to expand. Spathe about half an inch long, membranaceous. Perianth white tinged with purple. Staminodia (or abortive stamens) linear, alternating with the divisions of the perianth. Ovary linear, slender: style none: stigmas large, oval, 2-cleft.

Slow-flowing rivers and shallow bays: very common in the Hudson from the Highlands upward; also in the western part of the State. *Fl.* August. *Fr.* September – October. This plant is so abundant in the shoal waters of the Hudson, that in many places, during the months of August and September, it is difficult to row a boat through it. There can no longer be any doubt of its being the same as the European plant. Sir William Hooker examined living North American specimens that were cultivated in the Glasgow Botanic Garden, and found them to be identical with *V. spiralis*. It is generally believed that the roots of this plant are the favorite food of the Canvass-back Duck, and give to the flesh of that bird its delicious flavor.

ORDER CXII. ORCHIDACEÆ. *Juss.* THE ORCHIS TRIBE.

Flowers irregular. Perianth of 6 segments in two series, the outer (calyx) usually colored and petaloid like the inner; the lowest one *(lip)* differing in form from the others, and often spurred. The solitary fertile stamen (or in CYPRIPEDIUM the two fertile stamens) united with the style, and thus forming the *column*: anther often deciduous. Pollen cohering in two or more masses, which are either powdery or of the consistence of wax. Ovary cohering with the tube of the perianth (inferior), mostly 6-ribbed and often twisted, one-celled, with 3 parietal placentæ, which are covered with ovules: style forming part of the column: stigma a viscid concave spot in front of the column. Seeds extremely numerous and minute, invested with a reticulated coat.—Herbs of varied aspect, often with tuberous roots, and generally handsome flowers in spikes or racemes.

For convenience I call the three outer leaflets of the perianth sepals, the two lateral of the inner series petals, and the lowest one of the same series is named the lip.

CONSPECTUS OF THE TRIBES AND GENERA.

Tribe 1. MALAXIDEÆ. Pollen cohering in waxy masses, without any of the cellular substance by which the grains are connected, remaining under the form of a distinct gland lying upon the stigma, or of a transparent caudicula between the pollen masses and the gland.

1. MICROSTYLIS. Lip flat, sagittate or deeply cordate. Column very small, round. Anther terminal. Pollen-masses 4.
2. CORALLORHIZA. Sepals and petals connivent. Lip mostly produced behind. Column free. Masses of pollen 4, oblique (not parallel).
3. APLECTRUM. Sepals and petals connivent, equal. Lip with a claw, not produced at the base. Anther below the summit of the column. Masses of the pollen 4, oblique.
4. LIPARIS. Sepals spreading. Lip flat, expanded, entire. Column winged. Pollen-masses 4.

Tribe 2. VANDEÆ. Pollen cohering in waxy masses. Caudicles separating along with the glands of the stigma, and forming a close adhesion to the pollen-masses. Anther terminal, rarely dorsal, opercular.

5. TIPULARIA. Sepals spatulate, spreading. Lip spurred underneath at the base. Column projecting. Pollen-masses 4, parallel.

Tribe 3. OPHRYDEÆ. Pollen cohering in very numerous grains which are collected on a cobweb-like tissue, and fixed to the glands of the stigma. Anther terminal, erect or resupinate, persistent; the cells complete.

† Flower ringent. Lip with a spur at the base underneath. Pollen-masses stalked, with a gland at the base.

6. ORCHIS. Glands of the stalks of pollen-masses in a common little pouch.
7. GYMNADENIA. Glands of the stalk of the pollen-masses approximated, naked.
8. PLATANTHERA. Cells of the anther widely separated. Glands of the pollen-masses naked.

Tribe 4. ARETHUSEÆ. Anther opercular, terminal. Pollen-masses farinaceous, or consisting of loosely cohering grains.

9. ARETHUSA. Lip united at the base with the column, cucullate above, crested inside. Pollen angular.
10. POGONIA. Perianth without glands. Lip cucullate, crested inside. Pollen farinaceous.
11. CALOPOGON. Lip at the back of the flower, unguiculate, bearded on the face. Pollen angular.

Tribe 5. NEOTTIEÆ. Anther parallel with the stigma, erect. Pollen as in the preceding tribe.

12. SPIRANTHES. Spike spiral. Lip sessile, beardless, the base covered by the two lateral exterior sepals. Column wingless. Pollen farinaceous.
13. GOODYERA. Lip entire at the extremity, the base gibbous and included in the lateral exterior sepals. Pollen angular.
14. LISTERA. Lip 2-lobed. Column wingless. Anther fixed by its base. Pollen farinaceous.

Tribe 6. CYPRIPEDIEÆ. Anthers 2, with a dilated petaloid lobe between them. Lip large, inflated and saccate.

15. CYPRIPEDIUM. Character that of the tribe.

TRIBE I. *MALAXIDEÆ. Lindl.*

Pollen cohering in masses of a waxy texture, without any of the cellular connecting tissue, or of a transparent tail-like process. Anther terminal or operculate.

1. MICROSTYLIS. *Nutt. gen.* 2. *p.* 196; (subgenus of MALAXIS), *Lindl. gen. & sp. Orch. pl. p.* 18. *ADDER'S-MOUTH.*

[From *micros*, little, and *stylos*, a column.]

Sepals spreading, distinct; the lateral ones equal at the base. Petals filiform or linear, spreading. Lip widely spreading, excavated and sagittate or auriculate at the base, not tuberculate. Column very small, with 2 teeth or auricles at the summit. Anthers two-celled. Pollen-masses 4, collateral, cohering by pairs at the apex.—Pseudobulbous. Stem with one or two leaves. Flowers minute, racemose.

1. MICROSTYLIS MONOPHYLLOS, *Lindl.* *Short-stalked Adder's-mouth.*

Stem with a single leaf near the base; raceme spicate, slender, elongated; flowers about as long as the pedicels.—*Lindl. Orch. p.* 19; *Hook. fl. Bor-Am.* 2. *p.* 193. M. brachypoda, *Gray in ann. lyc. New-York*, 3. *p.* 228. Tipularia discolor, *Beck, bot. p.* 350, not of *Nutt.* Malaxis monophyllos, *Willd. sp.* 4. *p.* 90. Ophrys monophyllos, *Linn. sp.* 2. *p.* 946.

Pseudobulb ovoid. Stem 2 – 8 inches high, triangular, with two of the angles somewhat winged. Leaf solitary (rarely two), ovate-elliptical, about 2 inches long, contracted into a petiole at the base, and sheathing the lower part of the stem. Raceme 20 – 40-flowered; many of the flowers often abortive. Bracts minute, subulate, shorter than pedicels, which are 1 – 2 lines long and erect. Sepals spreading, oblong-lanceolate, acute. Lateral petals linear, attenuate upwards, appressed to the ovary. Lip triangular-hastate, with a long acumination; the lateral lobes obtuse.

Deep shady swamps: Fairfield, Herkimer county (*Prof. J. Hadley*); Bridgewater, Oneida county (*Dr. Gray & Dr. Bradley*). *Fl.* July.

2. MICROSTYLIS OPHIOGLOSSOIDES, *Nutt.* *Long-stalked Adder's-mouth.*

Stem with a single ovate clasping leaf near the middle; raceme obtuse, many-flowered; the pedicels much longer than the flowers.—*Nut. gen.* 2. *p.* 196; *Lindl. in bot. reg. t.* 1290, and *sp. Orch. p.* 19; *Beck, bot. p.* 513; *Hook. fl. Bor.-Am.* 2. *p.* 193; *Darlingt. fl. Cest. p.* 193. Malaxis ophioglossoides, *Willd. sp.* 4. *p.* 90; *Pursh, fl.* 2. *p.* 592; *Ell. sk.* 2. *p.* 503; *Bart. fl. N. Amer.* 3. *t.* 92. *f.* 2; *Torr. compend. p.* 322. M. unifolia, *Michx. fl.* 2. *p.* 157; *Bigel. fl. Bost. p.* 324.

Pseudobulb ovoid. Stem or scape 4 – 10 inches long, slender, angular. Leaf about 2 inches long, rather acute, sessile and sheathing or clasping. Flowers very numerous, about 2 lines in diameter, pale green, collected into a short raceme, many of them abortive, the lower ones distant: pedicels 3 – 6 lines long. Bracts much shorter than the pedicels, ovate-lanceolate. Sepals oblong. Lateral petals narrowly linear. Lip erect, obtusely auriculate on each side at the base, 3-toothed at the summit, the intermediate tooth small. Column very small, slightly projected. Capsules small, nearly globose.

Low moist grounds, particularly about the roots of trees: not common. *Fl.* July. *Fr.* October.

2. CORALLORHIZA. *Haller: Endl. gen.* 1339 (excl. APLECTRUM). *CORAL-ROOT*

[From the Greek, *korallion*, coral, and *rhiza*, a root; the roots being coral like.]

Sepals and petals connivent, nearly equal. Lip produced at the base underneath; the spur short and adnate to the ovary. Column free. Masses of pollen 4, oblique (not parallel), somewhat lenticular. — Plant leafless. Root coral-like. Scape sheathed. Flowers in a terminal raceme.

1. CORALLORHIZA INNATA, *R. Brown.* *Vernal Coral-root.*

Scape few- (5 – 10-) flowered; lip oblong, somewhat 2-toothed toward the base, deflexed; spur obsolete, adnate; capsules elliptical-obovoid. — *R. Br. in Ait. Kew.* (ed. 2.) 5. *p.* 209; *Hook. fl. Bor.-Am.* 2. *p.* 194 (excluding the syn. *C. odontorrhiza*, Nutt). C. verna, *Nutt. in jour. acad. Phil.* 3. *p.* 136. *t.* 7; *Torr. compend. p.* 322; *Beck, bot. p.* 345; *Darlingt. fl. Cest. p.* 510. Cymbidium Corallorhizon, *Willd. sp.* 4. *p.* 110. Ophrys Corallorhiza, *Linn. sp.* 2. *p.* 945.

Root (as in the other species of the genus) consisting of very thick fleshy fibres, which are branched and toothed like some corals. Scape about a span high, slender, not swollen at the base, clothed with several leafless acute sheaths, of a tawny purplish color. Flowers rather distant, at first erect, but at length spreading, of a dull purple. Sepals lanceolate. Lip nearly spotless, whitish, with a more or less distinct tooth on each side: spur almost wanting, adnate to the ovary. Capsules reflexed.

Woods, in rich soil. *Fl.* May – June: rare.

2. CORALLORHIZA ODONTORRHIZA, *Nutt.* (Pl. CXXVI.) *Small Late Coral-root.*

Scape few-flowered, somewhat bulbous at the base; lip oval or obovate, crenulate and waved; spur obsolete; capsules nearly globose. — *Nutt. gen.* 2. *p.* 197; *Torr. compend. p.* 322; *Beck, bot. p.* 345; *Darlingt. fl. Cest. p.* 510. Ophrys Corallorhiza, *Michx. fl.* 2. *p.* 158. Cymbidium Corallorhizon, *Willd. sp.* 4. *p.* 110. C. Wisteriana, *Conrad in jour. acad. Phil.* 6. *p.* 145?

Root as in the preceding. Scape about a span high, usually swollen into a roundish fleshy tuber at the base. Raceme 8 – 12-flowered. Flowers about as large as in *C. innata*, of a tawny and purplish color. Sepals and petals oblong-lanceolate. Lip whitish margined with purple; the palate marked with 2 oval protuberances near the middle: spur entirely wanting. Capsules roundish oval or nearly globose, 3 – 4 lines long, finally pendulous.

Woods, in rich soil: rather frequent. *Fl.* August – September. *Fr.* October.

3. CORALLORHIZA MULTIFLORA, *Nutt.* (Plate CXXVI.) *Large Coral-root.*

Scape many- (10 – 30-) flowered; lip cuneiform-oval, spotted, 3-lobed, the middle lobe recurved; spur prominent, adnate; capsules elliptical-obovoid. — *Nutt. in jour. acad. Phil.* 3. *t.* 7; *Torr. compend. p.* 354; *Beck, bot. p.* 345; *Darlingt. fl. Cest. p.* 511; *Hook. fl.*

Bor.-Am. 3. *p.* 194. C. innata, *Nutt. gen.* 2. *p.* 194; *Ell. sk.* 2. *p.* 504, not of *R. Br.*

Root as in the preceding. Scape 9 – 15 inches high, stout, dull brown and purplish. Flowers nearly twice as large as in the preceding, purplish brown. Pedicels 1 – 2 lines long, with short obtuse bracts at the base. Sepals lanceolate. Lip whitish, irregularly spotted with purple, very unequally 3-lobed, the lateral lobes tooth-like. Spur a manifest little protuberance. Capsules large, pendulous.

Woods, in rich soil : the most common species in New-York. *Fl.* Middle of July – September. *Fr.* October.

3. APLECTRUM. *Nutt. gen.* 2. *p.* 197 (subgenus of CORALLORHIZA), and *Jour. acad. Phil.* 3. *p.* 139. *PUTTY-ROOT.*

[From the Greek, *a*, without, and *plektron*, a spur.]

Petals and sepals nearly equal. Lip unguiculate, not produced at the base. Column free; the anther situated a little below the summit. Pollen-masses 4, oblique, lenticular. — Pseudobulbs 2 – 4, connected. Leaf solitary, radical. Scape sheathed. Flowers racemose.

1. APLECTRUM HYEMALE, *Nutt.* (Plate CXXVII.) *Adam & Eve. Putty-root.*

Nutt. gen. l. c., and *in jour. acad. l. c.*; *Torr. compend. p.* 322; *Beck, bot. p.* 346; *Darlingt. fl. Cest. p.* 511; *Hook. fl. Bor.-Am.* 2. *p.* 194. Cymbidium hyemale, *Willd. sp.* 4. *p.* 107; *Pursh, fl.* 2. *p.* 593. Corallorhiza hyemalis, *Bart. fl. N. Am.* 2. *t.* 52.

Pseudobulbs roundish, commonly 2, but sometimes 3 or 4 and rarely as many as 5, connected in a string by a thick fibre. Leaf 4 – 6 inches long and $1\frac{1}{2}$ – 3 inches wide, elliptical, acute, petiolate, plaited and marked with numerous prominent nerves which converge at each end : petiole inserted on the summit of the bulb. Scape 12 – 15 inches high, arising from the side of the bulb, with 3 rather loose acute sheaths, purplish. Flowers 10 – 20 in a loose raceme, of a dull yellowish brown mixed with purple : pedicels with small lanceolate bracts at the base. Sepals and petals linear-oblong. Lip shorter than the petals, 3-lobed, obtuse : middle lobe undulate and crenulate on the margin ; the palate prominently ridged, white speckled with purple. Column slightly curved, shorter than the lip. Lid of the anther roundish, caducous.

Woods, in rich vegetable mould : rare. Western and northern part of the State (*Dr. Gray & Dr. Bradley*); Washington county (*Dr. M. Stevenson*); north part of Westchester county, near Long Island Sound (*Dr. Mead*). *Fl.* middle of May. *Fr.* October. A new bulb, which is connected with the preceding one by a thick fibre, is produced every year, and the old usually remains till a third bulb is formed at the end of the season, when the first withers away; but sometimes they last for several years. The new leaf is formed in midsummer, remains through the winter, and withers away about the time of flowering. The bulbs contain a large quantity of viscid matter, which does not, however, answer as a cement, as asserted by Pursh.

4. LIPARIS. *L. C. Rich.; Lindl. Orchid. p.* 26. TWAYBLADE.

[So named from the Greek, *liparos*, fat; the leaves being unctuous to the touch.]

Sepals and petals nearly equal, linear, spreading. Lip flat, dilated, entire. Column elongated, semiterete. Pollen-masses in 2 pairs. — Leaves mostly 2, radical, with a pseudobulb at the base. Flowers pale green or greenish purple, in racemes, with slender pedicels.

1. LIPARIS LILIIFOLIA, *L. C. Rich.* *Common Twayblade.*

Leaves 2, ovate, rather acute, much shorter than the few-flowered raceme; lip very large, obovate, mucronate, colored; petals filiform, deflected.—*Lindl. in bot. reg. p.* 882, & *Orchid. p.* 28; *Beck, bot. p.* 350; *Darlingt. fl. Cest. p.* 512; *Hook. fl. Bor.-Am.* 2. *p.* 193. Malaxis liliifolia, *Willd. sp.* 4. *p.* 92; *Pursh, fl.* 2. *p.* 592; *Bot. mag. t.* 2004; *Nutt. gen.* 2. *p.* 196; *Ell. sk.* 2. *p.* 503; *Bigel. fl. Bost. p.* 324; *Torr. compend. p.* 321.

Pseudobulb ovoid. Leaves opposite, somewhat spreading, 2 – 4 inches long and about 1½ or 2 inches wide, strongly but obtusely keeled. Scape 5-angled, erect. Flowers spreading; the ovary purplish. Sepals lanceolate-linear; the two lower ones supporting the lip: upper one deflected. Petals very narrow, dull purplish red, deflected. Lip dull purplish and translucent. Column incurved, with 2 glands at the base. Anthers with a terminal lid. Ovary with many winged ridges.

Moist forests: not common. *Fl.* June.

2. LIPARIS LŒSELII, *L. C. Rich.* *Smaller Twayblade.*

Leaves 2, ovate-lanceolate, plicate, erect, much shorter than the few-flowered raceme; scape 3 – 5-angled; lip obovate, entire, of the same color on both sides; sepals and petals linear, unequal.—*Lindl. in bot. reg. t.* 882, and *Orchid. p.* 28; *Hook. fl. Bor.-Am.* 2. *p.* 194. L. Correana, *Spreng. syst.* 2. *p.* 740; *Graham in Edinb. new phil. jour. Oct.* 1828; *Beck, bot. p.* 350; *Darlingt. fl. Cest. p.* 512. Malaxis Correana, *Bart. prodr. fl. Phil. p.* 86; *Nutt. gen.* 2. *p.* 512. M. longifolia, *Bart. fl. Phil.* 2. *p.* 142, and *fl. N. Amer.* 3. *t.* 75. Ophrys Lœseli, *Linn. sp.* 2. *p.* 947.

Pseudobulb ovate. Leaves 3 – 5 inches long, sharply keeled underneath. Scape 5 – 8 inches high, prominently angled. Raceme rather crowded; the flowers erect, on pedicels about as long as the ovary, scarcely more than half as large as in the preceding species, but more numerous. Sepals lanceolate-linear, spreading equally. Petals linear, somewhat reflexed, yellowish green, revolute on the margin. Lip mucronate and incurved at the tip, waved on the margin, yellowish green. Column incurved, half the length of the lip. Ovary with many winged angles.

Moist woods, in rich soil: rare. Clinton, Oneida county (*Dr. Bradley*); North-Salem, Westchester county (*Dr. Mead*). *Fl.* June.

TRIBE II. *VANDEÆ. Lindl.*

Pollen cohering in waxy masses. Caudicles separating along with the gland of the stigma, and adhering closely to the pollen-masses. Anther terminal, rarely dorsal, opercular.

5. TIPULARIA. *Nutt. gen. 2. p. 195; Lindl. Orchid. p. 262.* CRANE-FLY ORCHIS.

ANTHERICLIS, *Raf. & Endl.*

Sepals obovate-spatulate, spreading. Petals lanceolate-linear. Lip oblong, sessile, 3-lobed; the intermediate lobe elongated, with a filiform spur at the base. Column wingless, free. Anther 2-celled, operculate. Pollen-masses 4, parallel: caudicle linear: glands small, transverse. — Pseudobulbs several, connected by a thick fibre. Leaf solitary, plicate. Flowers nodding, in a loose raceme, without bracts.

1. TIPULARIA DISCOLOR, *Nutt.* *Crane-fly Orchis.*

Nutt. l. c.; Ell. sk. 2. p. 502; Torr. compend. p 321; Lindl. Orchid. l. c. Orchis discolor, *Pursh, fl. 2. p. 586.* Limodorum unifolium, *Muhl. cat. p. 84.*

Pseudobulbs connected horizontally. Leaf about two inches long, ovate, petiolate, strongly nerved. Scape 10 – 15 inches high, slender. Raceme few-flowered; the flowers greenish with a tinge of purple. Pedicels slender. Sepals about the length of the petals. Lip nearly as long as the petals, the middle lobe linear-oblong: spur slender, nearly twice as long as the ovary. Column erect, semiterete. Lid of the anther deciduous.

Parma, Monroe county (*Dr. Bradley*). *Fl.* July. This singular plant has a wide range in the Atlantic States. Its northern limit, so far as I know, is Martha's Vineyard, where (I believe) it was found by Mr. Oakes. It has been detected at Deerfield, Massachusetts, by Prof. Hitchcock.

TRIBE III. *OPHRYDEÆ. Lindl.*

Pollen cohering in numerous waxy grains, which are collected on a cobweb-like tissue, and fixed to the glands of the stigma. Anther terminal, erect or resupinate, persistent, with complete cells.

6. ORCHIS. *Linn.; Lindl. Orchid. p. 258.* ORCHIS.

[An ancient Greek name for plants of this genus.]

Lip with a spur at the base underneath. Pollen-masses pedicellate, the glands at the base of the pedicels contained in one common little pouch. — Flowers showy, in spikes.

1. ORCHIS SPECTABILIS, *Linn.* *Showy Orchis.*

Leaves 2, radical, elliptical-obovate, obtuse; scape few-flowered; bracts large and foliaceous,

lanceolate : spur thick and clavate, a little shorter than the ovate entire lip, and about the length of the ovary. — *Linn. sp.* 2. *p.* 943 ; *Pursh, fl.* 2. *p.* 587 ; *Nutt. gen.* 2. *p.* 189 ; *Hook. exot. fl. p.* 69 ; *Ell. sk.* 2. *p.* 487 ; *Bigel. fl. Bost. p.* 320 ; *Torr. compend. p.* 316 ; *Beck, bot. p.* 347 ; *Lindl. Orchid. p.* 267 *Darlingt. fl. Cest. p.* 505 ; *Hook. fl. Bor.-Am.* 2. *p.* 195. O. humilis, *Michx. fl.* 2. *p.* 155. Habenaria spectabilis, *Spreng. syst.* 2. *p.* 689.

Root consisting of a few thick fleshy fibres or tubers. Leaves usually two, 3 – 5 inches long and 2 – 3 inches wide, sometimes nearly orbicular, of a bluish green, narrowed at the base but hardly petiolate. Scape acutely 5-angled, 4 – 7 inches high, naked, or sometimes furnished with a leaf which is smaller than the radical ones. Spike 4 – 6-flowered ; the flowers large. Bracts usually longer, but sometimes shorter than the flowers. Sepals and petals connivent and vaulted, of a violet purple color. Lip and spur white. Spur obtuse. Stalks of the pollen as long as the masses.

Woods, in rich vegetable mould : frequent. *Fl.* May.

7. GYMNADENIA. *R. Brown in hort. Kew.* (ed. 2.) 5. *p.* 191 ; *Lindl. Orchid. p.* 275.

GYMNADENIA

[From the Greek, *gymnos*, naked, and *aden*, a gland.]

Lip with a spur at the base. Glands of the stalks of the pollen-masses naked, approximated. — Habit that of Orchis.

1. Gymnadenia tridentata, *Lindl.* *Three-toothed Gymnadenia.*

Lower leaf oblong, rather obtuse, upper leaves much smaller ; flowers few, in a short oblong spike ; lip cuneate-oblong, 3-toothed at the apex ; sepals and petals oblong-ovate, obtuse, as long as the lip ; spur filiform-clavate, incurved, longer than the ovary. — *Lindl. Orchid. p.* 227 ; *Hook. fl. Bor.-Am.* 2. *p.* 195. Orchis tridentata, *Willd. sp.* 4. *p.* 41 ; *Pursh, fl.* 2. *p.* 587 ; *Bart. fl. N. Am.* 1. *t.* 15 ; *Torr. compend. p.* 317. Habenaria tridentata. *Hook. exot. fl. p.* 81 ; *Beck, bot. p.* 348 ; *Darlingt. fl. Cest. p.* 507. Orchis clavellata, *var.* tridentata, *Muhl. cat. p.* 80 ; *Nutt. gen.* 2. *p.* 189. O. clavellata, *Ell. sk.* 2. *p.* 505.

Root consisting of a few thick fleshy fibres. Stem 8 – 12 inches high, slender, angular. Principal leaf situated near the base, 3 – 4 inches long and three-fourths of an inch wide, tapering at the base ; the other leaves much smaller, lanceolate and bract-like. Spike 6 – 12-flowered, rather compact. Flowers pale yellowish green. Bracts ovate-lanceolate, acuminate, shorter than the ovary. Sepals and petals nearly alike, about 2 lines long. Lip with 3 short equal teeth at the apex.

Moist shady places, and swamps : rather rare. *Fl.* July. If *Orchis clavellata* of Michaux be only a variety of this plant with the lip entire, its specific name ought (being the older one) to have been adopted when it was removed to another genus. This plant is, as Hooker remarks, a doubtful congener of *G. conopsea*, Rich.

8. PLATANTHERA. *L. C. Rich.; Lindl. Orchid. p.* 284. *PLATANTHERA.*

[From the Greek, *platys*, broad, and *anthera*, an anther.]

Lip entire, with a spur at the base. Cells of the anther widely separated. Glands of the pollen-masses pedicellate; the glands naked.— Habit that of Orchis.

† *Lip undivided.*

1. PLATANTHERA OBTUSATA, *Lindl.* *Obtuse-leaved Platanthera.*

Leaf solitary, oblong-obovate, radical; spike rather loose; upper sepal very broad; petals somewhat triangular, narrowed upward, truncate at the apex; lip linear, with two minute tubercles at the base, as long as the curved subulate-conical spur. — *Lindl. Orchid. p.* 284; *Hook. fl. Bor.-Am.* 2. *p.* 196. *t.* 199. Orchis obtusata, *Pursh, fl.* 2. *p.* 588. Habenaria obtusata, *Richards. app. Frankl. narr.* (ed. 2.) *p.* 33; *Spreng. syst.* 3. *p.* 689.

Root fasciculate. Stem 5 – 8 inches high, slender. Leaf solitary towards the base of the stem, 2 – 3 inches long and about three-fourths of an inch wide, mostly obtuse. Spike 5 – 8-flowered; the flower greenish, erect, on short pedicels with lanceolate bracts at the base, which are longer than the ovary. Upper sepal roundish-cordate; lateral ones oblong, obtuse, about 3 lines long. Column very short.

Sphagnous woods on the sides of the Essex mountains. Borders of Cranberry lake (*Dr. Emmons*). *Fl.* early in August.

2. PLATANTHERA ORBICULATA, *Lindl.* *Large-leaved Orchis.*

Radical leaves 2, nearly orbicular (very large), spreading; scape bracteate; raceme loose, many-flowered; upper sepal orbicular, the lateral ones ovate; lip linear-spatulate, one half longer than the sepals; spur linear-clavate, curved, nearly twice as long as the ovary. — *Lindl. Orchid. p.* 286; *Hook. fl. Bor.-Am.* 2. *p.* 196. *t.* 200. Orchis orbiculata, *Pursh, fl.* 2. *p.* 588. Habenaria orbiculata, *Torr. compend. p.* 318; *Gray in ann. lyc. N. York,* 3. *p.* 228. H. macrophylla, *Goldie in Edin. phil. jour.* 6. *p.* 331.

Root fasciculate. Leaves 4 – 8 inches in diameter, spreading flat on the ground, somewhat fleshy (thin and membranaceous when dry), shining. Scape 1 – 2 feet high, furnished with several small appressed bract-like scales. Raceme 10 – 20-flowered; the flowers greenish-white, spreading. Bracts lanceolate, shorter than the ovaries. Sepals strongly nerved; the upper one nearly orbicular, erect; the lateral ones ovate, longer than the upper. Petals ovate, smaller than the sepals, reflexed. Lip obtuse, depending. Lobes of the anther produced on each side at the base.

Fertile woods: rather rare. *Fl.* July.

3. PLATANTHERA HOOKERI, *Lindl.* *Hooker's Orchis.*

Radical leaves 2, nearly orbicular or oval (large), spreading; scape nearly naked; spike strict, many-flowered; sepals all ovate-lanceolate, the lower ones acute, the upper rather acute; petals linear, dilated at the base, shorter than the sepals; lip lanceolate, acuminate, a little shorter than the ovary. — *Lindl. Orchid. p.* 286; *Hook. fl. Bor.-Am.* 2. *p.* 196. Habenaria orbiculata, *Goldie, l. c.; Hook. exot. fl. t.* 145 (not of *Pursh*). H. Hookeri, *Torr. & Gr. in ann. lyc. N. York,* 3. *p.* 229.

Root fasciculate. Leaves 3 – 4 inches long, somewhat fleshy, smooth and shining, varying from nearly orbicular to obovate or oval. Scape 8 – 12 inches high, sometimes bearing a small lanceolate leaf. Spike 10 – 20-flowered; the flowers much closer and not spreading, yellowish-green, on very short pedicels. Bracts lanceolate, nearly as long as the flowers. Petals acute. Lip projecting and a little incurved. Anther triangular; the angles at the base obtuse, and scarcely produced.

Fertile woods, north and west of the Highlands: more common than the preceding, from which it is easily distinguished by its closer spike, projecting spurs and narrow upper sepal.

4. PLATANTHERA FLAVA, *Gray.* *Small Pale-yellow Platanthera.*

Stem leafy; lower leaves oblong, acute, the upper lanceolate; spike somewhat dense; bracts acuminate, longer than the (small) flowers; lip oblong, 2-toothed toward the base, and a single tubercle in the middle, about half the length of the clavate spur. — *Gray in Sill. jour.* 37. *p.* 308. Orchis flava, *Linn. sp.* 2. *p.* 942, not of *Nutt.* O. virescens, *Willd. sp.* 4. *p.* 37. O. fuscescens, *Pursh, fl.* 2. *p.* 587. O. herbiola, *Pursh, l. c.* O. bidentata, *Ell. sk.* 2. *p.* 448. Habenaria herbiola, *R. Br. in hort. Kew.* (ed. 2.) 5. *p.* 193; *Beck, bot. p.* 347; *Darlingt. fl. Cest. p.* 506. H. virescens, *Spreng. syst.* 3. *p.* 688. H fuscescens, *Torr. compend. p.* 318. Platanthera herbiola, *Lindl. Orchid. p.* 287; *Hook. fl. Bor.-Am.* 2. *p.* 197.

Root consisting of fasciculate fleshy fibres. Stem 12 – 18 inches high, clothed with 3 – 5 clasping leaves which are 3 – 6 inches long and one or two inches wide. Flowers numerous, the lower ones considerably shorter than the leafy bracts at their base. Sepals greenish, ovate, nearly equal. Petals greenish yellow, ovate. Lip obtuse or emarginate, furnished with a tooth on each side toward the base, and a protuberance on the palate. Spur rather shorter than the ovary.

Wet borders of streams and thickets: frequent. *Fl.* June. Dr. Gray has proved that this is the original *Orchis flava* of Linnæus, and therefore very properly restored the specific name.

5. PLATANTHERA HYPERBOREA, *Lindl.* *Northern Platanthera.*

Stem leafy; leaves lanceolate, erect; spike many-flowered, the lanceolate bracts about as long as the flowers; sepals ovate, the upper one rather shorter and broader; lip and petals lanceolate, somewhat equal; spur thick and obtuse, about half the length of the ovary. — *Lindl. Orchid. p.* 287; *Hook. fl. Bor.-Am.* 2. *p.* 197. Orchis hyperborea, *Willd. sp.* 4. *p.* 37? *Pursh, fl.* 2. *p.* 588. Habenaria hyperborea, *R. Br. in hort. Kew.* (ed. 2.) 5. *p.* 193; *Richards. in Frank. jour. app.* (ed. 2.) *p.* 33; *Gray in ann. lyc. N. York, l. c. p.* 232. H. dilatata, *Torr. compend. p.* 318. Platanthera dilatata, *Beck, bot. p.* 347.

Root consisting of thick fibres or tubers. Stem varying from 6 or 8 inches to 2 feet or more in height, slender or very stout (sometimes nearly an inch in diameter at the base). Leaves 3 – 8 inches long, and from half an inch to nearly two inches in breadth. Spike in the smaller and slender forms rather loose and short, in the larger state close and elongated. Bracts gradually diminishing in size towards the top, where they are scarcely as long as the flowers. Petals and sepals greenish yellow. Lip not dilated at the base. Cells of the anther approximated at the base.

Sphagnous swamps: frequent in the northern and western part of the State. *Fl.* June – July. *P. Huronensis*, Lindl. (Orchis Huronensis, *Nutt.*), is probably not distinct from this species.

6. PLATANTHERA DILATATA, *Lindl.* *Small White-flowered Orchis.*

Stem leafy; leaves lanceolate; spike somewhat loosely flowered, cylindrical; bracts linear-lanceolate, the lower ones about as long as the flowers; sepals ovate, obtuse; lip lanceolate-linear, entire, dilated at the base, about as long as the thick obtuse spur. — *Lindl. Orchid. p.* 287; *Hook. fl. Bor.-Am.* 2. *p.* 198? Orchis dilatata, *Pursh, fl.* 2. *p.* 588. Habenaria dilatata, *Hook. exot. fl. t.* 95? *Gray, l. c. p.* 231.

Root fasciculated and fleshy. Stem 1 – 2 feet high, angular. Leaves lanceolate, 4 – 6 inches long, and half to three-fourths of an inch wide, acute. Spike many-flowered, 2 – 5 inches long. Bracts linear-lanceolate, the lower ones often longer than the flowers; the uppermost much shorter. Flowers white. Upper sepal broader and rather shorter than the lateral ones, which are oblique and spreading or reflexed. Petals linear-lanceolate, connivent with the upper sepal. Lip somewhat rhomboidal-lanceolate. Spur rather shorter than the ovary. Cells of the anther a little distant at the base.

Sphagnous swamps, in the northern and middle parts of the State. *Fl.* June – July. With us this and the preceding species seem sufficiently distinct, the latter being easily known by its white flowers, and the lip, which is dilated at the base; but Sir William Hooker suspects that it is only a form of *P. hyperborea*, if indeed his plant be the same as ours.

†† *Lip entire.*

6. PLATANTHERA BLEPHARIGLOTTIS, *Lindl.* *Fringed White Orchis.*

Stem leafy, the leaves lanceolate and acute; spike oblong, dense, many-flowered, with lanceolate bracts which are shorter than the ovary; sepals roundish oblong, the lateral ones reflexed; petals spatulate, slightly incised at the summit; lip oblong, flat, fimbriate, about one-third as long as the spur; ovary with a very long beak.— *Lindl. Orchid. p.* 199; *Hook. fl. Bor. Am.* 2. *p.* 199. Orchis blephariglottis, *Willd. sp.* 4. *p.* 9; *Pursh, fl.* 2. *p.* 585; *Ell. sk.* 2. *p.* 483; *Bigel. fl. Bost. p.* 318. O. ciliaris, *var.* alba, *Michx. fl.* 2. *p.* 156. Habenaria blephariglottis, *Torr. compend. p.* 317; *Beck, bot. p.* 348.

var. *holopetala*: petals entire. Platanthera holopetala, *Lindl. l. c.* Habenaria blephariglottis, *Hook. exot. bot. t.* 87.

Root fasciculate. Stem 1½ – 2 feet high. Lower leaves 6 – 8 inches long and 1 – 1½ inch wide, the upper ones gradually smaller. Spike 2 – 4 inches long. Bracts lanceolate, leafy. Flowers pure white. Sepals about 3½ lines long. Petals very small, a little incised or slightly ciliate at the summit (in var. *holopetala* entire). Lip about one third of an inch long, beautifully cut and fringed; the little segments capillary. Spur nearly an inch long, somewhat incurved, particularly towards the extremity. Tail of the pollen-masses very long and slender: gland small. Capsule tapering above into a long slender beak.

Swamps: not common. *Fl.* July. One of the most beautiful North American plants of this tribe. I entirely agree with Sir William Hooker in considering the *P. holopetala* of Lindley as only a variety of this species, which again scarcely differs from the following, except in the white flowers. Lindley has even a white variety of *P. ciliaris!*

7. PLATANTHERA CILIARIS, *Lindl.* *Fringed Yellow Orchis.*

Stem leafy; leaves lanceolate and acute; spike oblong, dense, many-flowered, the lanceolate bracts shorter than the ovary; sepals roundish-ovate, the lateral ones reflexed; petals linear, incised; lip oblong, deeply and finely cut and fringed, about one third as long as the spur; ovary with a long beak. — *Lindl. Orchid. p.* 292; *Hook. fl. Bor.-Am.* 2. *p.* 199. Orchis ciliaris, *Linn. sp.* 2. *p.* 939; *Michx. fl.* 2. *p.* 156 (*var.* lutea); *Pursh, fl.* 2. *p.* 585; *Bot. mag. t.* 1668; *Ell. sk.* 2. *p.* 483; *Bigel. fl. Bost. p.* 319. Habenaria ciliaris, *R. Br. in hort. Kew* (ed. 2.) 5. *p.* 192; *Torr. compend. p.* 317; *Beck, bot. p.* 348; *Gray, l. c. p.* 230.

Root, stem, leaves and spike as in the preceding. Flowers bright orange-yellow. Petals distinctly incised. Lip larger and more conspicuously ciliate than in *P. blephariglottis.*

Open swamps: not rare. *Fl.* July. A very ornamental plant.

8. PLATANTHERA PSYCODES, *Gray.* *Purple Swamp Orchis.*

Stem leafy ; leaves oblong ; raceme oblong, many-flowered ; bracts linear-lanceolate, the lower ones as long as the flowers, the upper scarcely equal to the ovary ; sepals ovate, obtuse, the lateral ones deflexed ; petals fimbriate-toothed, cuneate, oblong, obtuse, incised ; lip unguiculated, roundish, flabelliform, 3-parted, the segments cuneate and incisely toothed, the intermediate one larger ; spur incurved, about twice the length of the lip.—*Gray, l. c. p.* 310. Orchis physodes, *Linn. sp.* 2. *p.* 493, not of *Willd.* Orchis fimbriata, *Ait. Kew.* (ed. 1.) 3. *p.* 297 ; *Bigel. fl. Bost. p.* 320. O. incisa, *Muhl. in Willd. sp* 4. *p.* 40, not of *Pursh* or *Nuttall.* O. fissa, *Muhl. in Willd. l. c.* not of *Pursh.* Habenaria fimbriata, *R. Br. in hort. Kew.* (ed. 2.) 5. *p.* 193, *and* H. incisa & fissa, *Torr. compend. p.* 319 ; *Spreng. syst.* 3. *p.* 692 ; *Beck, bot. p.* 349. H. racemosa, *Raf. ann. of nat.* 1820, *p.* 15. Platanthera fimbriata, *Lindl. Orchid. p.* 293 ; *Hook. fl. Bor.-Am.* 2. *p.* 200.

var. *grandiflora :* flowers larger : segments of the lip (particularly the lateral ones) fimbriate, with capillary segments (*Gray, l. c.*). Orchis fimbriata, *Willd. l. c.* O. grandiflora, *Bigel. fl. Bost. p.* 321. Habenaria grandiflora, *Torr. compend. p.* 319 ; *Beck, bot. p.* 349 ; *Darlingt. fl. Cest. p.* 509.

Root fasciculate. Stem 1½ – 3 feet high, stout, angular. Leaves 3 – 8 inches long and 1 – 3 inches wide, the lower ones often obtuse. Flowers bright purple, in a spike which is from 2 – 6 inches long and often compact ; those of the *var.* considerably larger than the ordinary form. Upper sepal broadly ovate ; lower ones broader. Petals longer than the sepals, moderately cut-toothed. Lip large, 3-parted to the base ; the segments dilated at the apex, and cut into numerous short lobes. Spur filiform-clavate, longer than the ovary, which is attenuated at the base into a pedicel. Cells of the anther rather distant.

Wet meadows and borders of streams, particularly in mountainous districts. *Fl.* July – August. A beautiful but somewhat variable species, the synonomy of which was in great confusion till Dr. Gray published his valuable paper on some North American ORCHIDACEÆ, in Silliman's Journal.

9. PLATANTHERA LACERA, *Gray.* *Ragged Orchis.*

Stem leafy ; raceme loose, many-flowered, with the bracts shorter than the flowers ; sepals ovate ; petals oblong-linear, obtuse, entire ; lip unguiculated, slender, 3-parted, the lobes cut into capillary segments ; spur filiform-clavate, rather longer than the sessile ovary. — *Gray, l. c. p.* 311. Orchis psycodes, *Muhl. in Willd. sp.* 4. *p.* 39, not of *Linn.* ; *Pursh, fl.* 2. *p.* 585 ; *Bigel. fl. Bost. p.* 319. O. lacera, *Michx. fl.* 2. *p.* 156 ; *Pursh, l. c. ; Ell. sk.* 2. *p.* 484. Habenaria psycodes, *Torr. compend. p.* 317 ; *Spreng. syst.* 3. *p.* 693 (*and* H. lacera *of the same author*) ; *Beck, bot. p.* 349 ; *Darlingt. fl. Cest. p.* 509. H. lacera, *R. Br. l. c. p.* 193. Platanthera psycodes, *Lindl. Orchid. p.* 294 ; *Hook. fl. Bor.-Am.* 2. *p.* 20. *Audubon's birds, t.* 164.

Root fasciculate. Stem 1½ – 2½ feet high, rather slender, sparingly clothed with leaves,

angular. Leaves 3 – 8 inches long and from half an inch to an inch and a half wide, mostly acute, but sometimes obtuse. Flowers pale greenish yellow, middle sized. Upper sepal obtuse; the lateral ones oblique or twisted, and rather acute. Petals often a little retuse, longer than the sepals. Lip more than twice as long as the sepals; the middle segment with a long slender base, and, as well as the others, cut into a few capillary segments. Spur considerably thickened towards the extremity, rather acute.

Moist meadows and thickets: frequent. *Fl.* June – July. An unobtrusive species, often overlooked among other tall herbs.

10. PLATANTHERA BRACTEATA. *Green-flowered Orchis.*

Stem leafy; spike loose, the bracts leafy, 2 – 3 times longer than the flowers; petals linear-lanceolate, erect; lip oblong-linear, slightly bifid at the apex, with a minute central tooth; spur very short, obtuse and somewhat inflated.—Orchis bracteata, *Willd. sp.* 4. *p.* 34; *Pursh, fl.* 2. *p.* 587; *Bigel. fl. Bost. p.* 320. Satyrium bracteatum, *Pers. syn.* 2. *p.* 507; *Muhl. cat. p.* 80. Habenaria bracteata, *R. Br. in hort. Kew.* (ed. 2.) 5. *p.* 192; *Torr. compend. p.* 318; *Beck, bot. p.* 348; *Darlingt. fl. Cest. p.* 507. Peristylis bracteatus, *Lindl. Orchid. p.* 298; *Hook. fl. Bor.-Am.* 2. *p.* 201.

Root fasciculate or tuberous. Stem 6 – 12 inches high. Leaves 3 – 4 inches long, broadly lanceolate, acute, or the lowest one sometimes obtuse. Spike few-flowered, 2 – 3 inches long; the flowers small, greenish. Bracts linear lanceolate, spreading and conspicuous. Sepals ovate, erect. Petals rather shorter than the sepals. Lip sometimes spatulate, truncate at the tip, and furnished with 3 teeth, of which the middle one is very small, or sometimes almost wanting. Spur less than half the length of the lip, somewhat 2-lobed, saccate and translucent.

Shady woods: rare. End of May – June. I have not adopted the genus PERISTYLIS, because it seems to differ from PLATANTHERA in scarcely any thing except the short spur. Our plant is so nearly related to *Peristylis viridis* of Lindley (Satyrium viride, *Linn.*), that Lindley and Sir William Hooker think it is hardly distinct.

TRIBE IV. *ARETHUSEÆ. Lindl.*

Anther opercular, terminal. Pollen-masses farinaceous, or consisting of loosely cohering grains.

9. ARETHUSA. *Gronov.; Lindl. Orchid. p.* 426. *ARETHUSA.*

[So named from Arethusa, a nymph of Diana.]

Flower somewhat ringent. Sepals and petals somewhat equal, connivent and cucullate above, cohering at the base. Lip deflected at the apex, bearded inside. Pollen-masses 4, angular. — A small plant with a bulbous root, and single large terminal flower; the leaf nearly concealed in the sheathing scales of the scape.

1. ARETHUSA BULBOSA, *Linn.* *Arethusa.*

Linn. sp. 2. *p.* 950; *Michx. fl.* 2. *p.* 160; *Pursh, fl.* 2. *p.* 590; *Nutt. gen.* 2. *p.* 194; *Ell. sk.* 2. *p.* 500; *Bigel. fl. Bost. p.* 325; *Bart. fl. N. Am.* 2. *t.* 53. *f.* 1; *Hook. exot. fl. t.* 170; *Torr. compend. p.* 521; *Bot. mag. t.* 2204; *Beck, bot. p.* 346; *Darlingt. fl. Cest. p.* 502; *Lindl. l. c.; Hook. fl. Bor.-Am.* 2. *p.* 200.

Pseudobulb ovoid, about the size of a filbert. Scape arising from the base of the bulb, 4 – 8 inches high, erect, clothed with 3 – 4 loosely sheathing scales. From the uppermost sheath proceeds a linear nerved leaf, which originates near the base of the scape: it is at first almost entirely concealed, but finally is protruded an inch or more. Flower an inch and a half long, bright purple, fragrant, with 2 small unequal bracts at the base. Sepals and petals lanceolate. Lip broader, conduplicate near the middle, waved on the margin, variegated with yellow and white, and handsomely bearded in the middle. Column incurved, dilated and membranaceous above the anther. Pollen-masses oblong, 2 in each cell of the anther, collateral.

Sphagnous swamps: frequent. May. A small but highly ornamental plant. The scape is very rarely 2-flowered.

10. POGONIA. *Juss. gen. p.* 65; *Lindl. gen. p.* 413. *POGONIA.*

POGONIA and TRIPHORA, *Nutt.*

[From the Greek, *pogon*, beard; in allusion to the bearded lip of the flower.]

Petals and sepals nearly equal, more or less erect. Lip sessile or unguiculate, cucullate, mostly crested on the inside. Column wingless. Anther terminal. Pollen-masses 2, farinaceous. — Habit various. Flowers purple.

1. POGONIA OPHIOGLOSSOIDES, *Ker.* *Single-leaved Pogonia.*

Scape mostly one-flowered, with a single leaf near the middle and a foliaceous bract near the flower; lip spatulate-oblong, crested and fringed. — *Ker in bot. reg. t.* 148; *Nutt. gen.* 2. *p.* 192; *Bart. fl N. Am.* 3. *t.* 77; *Hook. exot. fl. t.* 70; *Torr. compend. p.* 320; *Beck, bot. p.* 344; *Darlingt. fl. Cest. p.* 502; *Hook. fl. Bor.-Am.* 2. *p.* 201. Arethusa ophioglossoides, *Linn. sp.* 2. *p.* 951; *Michx. fl.* 2. *p.* 159; *Pursh, fl.* 2. *p.* 590; *Bigel. fl. Bost. p.* 325.

Root fasciculate. Scape 9 – 15 inches high, slender. Leaf 1 – 3 inches long, varying from lanceolate to ovate, erect, rather acute. Bract leaf-like, linear-lanceolate, about an inch long. Flowers large, mostly solitary (sometimes 2 or 3), pale purple, a little nodding; the sepals and petals nearly equal, narrowly oblong, obtuse. Column much shorter than the petals, thick and clavate.

Swamps, particularly where SPHAGNUM abounds: frequent. June – July.

2. Pogonia verticillata, *Nutt.* *Verticillate Pogonia.*

Scape with a whorl of leaves at the summit, 1 – 2-flowered ; sepals very long and lanceolate-linear ; petals small, elliptical ; lip 3-lobed ; the middle lobe dilated and undulate. — *Nutt. gen.* 2. *p.* 192 ; *Bart. fl. N. Am.* 2. *t.* 67 ; *Ell. sk.* 2. *p.* 497 ; *Torr. compend. p.* 321 ; *Beck, bot. p.* 345 ; *Darlingt. fl. Cest. p.* 503. Arethusa verticillata, *Willd. sp.* 4. *p.* 81 ; *Pursh, fl.* 2. *p.* 591 ; *Bigel. fl. Bost. p.* 325. A. medeoloides, *Pursh, l. c.* A. stellata, *Muhl. cat. p.* 84 !

Root consisting of long thick succulent fibres. Scape 8 – 12 inches high, dull purplish, quite naked except 2 – 3 lanceolate scales at the base, and the verticillate leaves at the summit. Leaves oval or elliptical-obovate, 1 – 2 inches long, sessile, abruptly pointed at each end. Flowers mostly solitary (rarely 2 or 3 on a scape), pedunculate, inclined or somewhat nodding. Petals varying from three-fourths of an inch to 2 inches in length, and about 2 lines wide, of a dull greenish brown. Petals much shorter than the sepals and paler, mostly obtuse, but sometimes acute. Lip shorter than the petals, crested along the middle. Column thick and clavate : anther large and horizontal. Pollen-masses 2, oblong, with a longitudinal groove on the inside.

Swamps and moist woods : rare. Oneida county (*Dr. Knieskern*) ; Eaton, Madison county (*Dr. Bradley*). *Fl.* May – June.

3. Pogonia pendula, *Lindl.* *Nodding Pogonia.*

Stem about 3-flowered near the summit ; leaves ovate (small), distant, clasping ; flowers axillary, pendulous ; lip unguiculate and somewhat 3-lobed, not crested.— *Lindl. in bot. reg. t.* 908 ; *Hook. fl. Bor.-Am.* 2. *p.* 202. Arethusa parviflora, *Michx. fl.* 2. *p.* 160. A. pendula, *Willd. sp.* 4. *p.* 82 ; *Pursh, fl.* 2. *p.* 590. " A. trianthophorus, *Swartz, act. Holm.* 1800, *p.* 230." Triphora pendula, *Nutt. gen.* 2. *p.* 193 ; *Ell. sk.* 2. *p.* 498 ; *Torr. compend. p.* 321 ; *Beck, bot. p.* 346 ; *Darlingt. fl. Cest. p.* 504.

Pseudobulbs oblong, buried deep in the ground. Stems often growing in clusters, 3 – 8 inches high, tender and somewhat succulent. Leaves 3 – 5, about half an inch long, the lowest obtuse, the others rather acute. Flowers 1 – 4, pale purple, on axillary pedicels, at first somewhat erect, but soon pendulous. Sepals and petals nearly equal, connivent. Lip cucullate, about as long as the petals, rough but not crested ; the middle lobe oblong. Column spatulate, cucullate. Capsules elliptical, half an inch long.

Fertile woods, in black vegetable mould : rare. *Fl.* August – September.

11. CALOPOGON. *R. Brown in hort. Kew.* (ed. 2.) 5. *p.* 204; *Lindl. Orchid. p.* 474. *CALOPOGON.*

[From the Greek, *kalos*, beautiful; and *pogon*, beard; in allusion to the beautiful bearded lip.]

Flower (apparently) inverted. Sepals and petals somewhat equal, spreading, distinct. Lip on the upper side of the flower, erect, unguiculate, conspicuously bearded. Pollen angular. — Root pseudobulbous. Leaves nearly radical, ensiform. Flowers few, large, racemose.

1. CALOPOGON PULCHELLUS, *R. Br.* *Calopogon.*

R. Brown, l. c.; Nutt. gen. p. 194; *Ell. sk.* 2. *p.* 499; *Bart. fl. N. Am.* 2. *t.* 68; *Sweet, Br. fl. gard. t.* 115; *Torr. compend. p.* 321; *Beck, bot. p.* 345; *Darlingt. fl. Cest. p.* 504; *Hook. fl. Bor.-Am.* 2. *p.* 202. Limodorum tuberosum, *Linn. sp.* 2. *p.* 950; *Michx. fl.* 2. *p.* 159. Cymbidium pulchellum, *Willd. sp.* 4. *p.* 105; *Pursh, fl.* 2. *p.* 592; *Bigel. fl. Bost. p.* 326.

Scape swollen at the base into a small roundish tuber, 12 – 18 inches high, slender. Leaf usually solitary, situated on the lower part of the scape, 6 – 8 inches long and $\frac{1}{2}$ – $\frac{3}{4}$ of an inch wide, somewhat rigid, marked with numerous nerves. Flowers 3 – 8, about an inch in diameter, bright purple, fragrant. Bracts lanceolate, shorter than the ovary. Sepals and petals ovate-lanceolate, acute. Lip above ! broadly dilated at the summit, conspicuously bearded with white, orange-colored and purplish clavate hairs. Column on the lower side of the flower incurved, dilated and winged above.

Sphagnous swamps : frequent. *Fl.* June – July. A highly ornamental plant.

TRIBE V. *NEOTTIEÆ. Lindl.*

Anther parallel with the stigma, erect. Pollen consisting of loosely cohering grains.

12. SPIRANTHES. *L. C. Rich.; Lindl. Orchid. p.* 463. *LADY'S-TRESSES.*

[From the Greek, *speira*, a cord, and *anthos*, a flower; the spike of flowers being twisted like the strands of a rope.]

Flowers ringent; exterior sepals oblique, and including the base of the lip. Petals and upper sepal connivent. Lip parallel with the column, the lower part of which is embraced by its base, oblong, channelled, with 2 callosities at the base. Column curved : stigma ovate, mostly with a short acuminate beak, finally 2-cleft. Pollen-masses 2, powdery, 2-lobed. — Flowers small, in a close spiral spike.

1. SPIRANTHES GRACILIS, *Bigel.* (Plate CXXVIII.) *Slender Lady's-tresses.*

Radical leaves small, ovate or oblong-lanceolate, petiolate (fugacious); scape slender, elongated, sheathed with several leafless sheaths; spike slender, the flowers longer than the

bracts ; lateral sepals free ; lip oblong-spatulate, crenulate. — *Bigel. fl. Bost. p.* 322 (*under* NEOTTIA, *subgenus* Spiranthes) ; *Beck, bot. p.* 343 (*including* S. tortilis) ; *Hook. fl. Bor.-Am.* 2. *p.* 202. *t.* 203. S. tortilis ? & *var.* gracilis, *Darlingt. fl. Cest. p.* 501. Neottia tortilis, *Pursh, fl.* 2. *p.* 589 ; *Muhl. cat. p.* 80 ; *Ell. sk.* 2. *p.* 491 ; *Torr. compend* (including *var.* gracilis) *p.* 320, not of *Swartz.* Ophrys æstivalis, *Michx. fl.* 2. *p.* 157.

Root consisting of several fasciculate oblong tubers. Radical leaves spreading, 1 – 1½ inch long, often solitary, acute, varying from ovate to almost lanceolate, often absent, or disappearing very early, so that the plant appears leafless. Scape strong and wiry, but very slender, often flexuous, about a foot high, furnished with 3 – 6 sheathing acute scales. Spike 2 – 4 inches long, slender and beautifully spiral, the flower sweet-scented, small, white and nearly smooth. Bracts ovate, lanceolate, acuminate, appressed to the flower. Sepals and petals oblong. Lip recurved, nearly sessile ; the margin finely crenulate and waved. Column very short, with a short acumination above the stigma, behind which is placed the anther.

Meadows and dry open woods : common. July – August. Dr. Darlington finds linear radical leaves in his *S. tortilis*, but remarks that they mostly wither and disappear before the flowers expand. If that plant is the same as ours, it must be extremely variable as to the form of the leaves ; but he quotes the figure of N. tortilis, *Bart. fl. N. Am. t.* 35. *f.* 2, which surely belongs to the following species.

2. SPIRANTHES CERNUA, *L. C. Rich.* (Plate CXXIX.) *Nodding Lady's-tresses.*

Leaves nearly radical, lanceolate-linear ; scape rather stout, sheathed, the lower sheaths bearing short leaves ; spike dense, the flowers obliquely recurved and cernuous ; lip oblong, obtuse, crisped and crenate. — *Lindl. in bot. reg. t.* 283 ; *Beck, bot. p.* 344 ; *Darlingt. fl. Cest. p.* 501 ; *Hook. fl. Bor.-Am.* 2. *p.* 202. Ophrys cernua, *Linn. sp.* 2. *p.* 946 ; *Michx. fl.* 2. *p.* 158. Neottia cernua, *Willd. sp.* 4. *p.* 75 ; *Pursh. fl.* 2. *p.* 589 ; *Bot. mag. t.* 1658 ; *Bigel. fl. Bost. p.* 322 ; *Torr. compend. p.* 320. N. tortilis, *Bart. fl. N. Am.* 2. *t.* 35. *f.* 2.

Root consisting of fleshy tubers. Leaves radical or from the lower part of the scape, 3 – 10 inches long and 2 – 4 lines wide. Scape 8 – 18 inches high, somewhat succulent, smoothish and obscurely 3-sided below, pubescent above, the lower sheaths usually bearing leaves from one to two inches long. Spike 2 – 4 inches long, the flowers white or ochroleucous, larger, sweeter scented and more cernuous than in the preceding species, but less numerous. Bracts two-thirds the length of the flower, with a long slender acumination, pubescent. Lateral sepals a little spreading, the upper one closely connivent with the petals and arching. Lip nearly white, conspicuously waved and crenulate, longer than the lateral sepals. Column nearly as in *S. gracilis.*

Wet meadows and moist thickets : common. *Fl.* August – October. I have occasionally found solitary specimens of this plant, nearly three feet high.

3. SPIRANTHES PLANTAGINEA. *Lady's-tresses.*

Entirely smooth; leaves mostly radical, oblong-lanceolate, 3 – 7-nerved; scape somewhat succulent, with 2 – 3 nearly leafless sheaths; spike loosely spiral; bracts lanceolate, the lower ones equalling the flowers, which are slender and recurved-cernuous; lip oblong, obtuse, crenulate on the margin, about 5-nerved. — S. æstivalis, *Oakes in cat. Vermont, pl. p.* 28 (not of *Rich*). Neottia plantaginea, *Raf. in Amer. month. mag.* 2. *p.* 206. N. cernua, *var.?* latifolia, *Torr. compend. p.* 320. N. (Gyrostachys) lucida, *H. H. Eaton in Transylv. jour. med. March,* 1832. S. cernua, *var.?* latifolia, *Torr. in geol. report of N. York,* 1841.

Root consisting of oblong fascicled tubers. Leaves 3 – 4, radical or nearly so, 2 – 4 inches long and 4 – 8 lines wide, rather acute, smooth and shining. Scape 5 – 10 inches high, with 2 – 3 sheaths which are produced into short linear leaves. Spike about 2 inches long. Flowers intermediate in size between those of the two preceding species. Petals and sepals white. Lip pale yellow with green lines, very obtuse, nearly sessile, with an oblong callosity on each side of the base, marked with 5 pretty distinct longitudinal lines, distinctly crenulate towards the extremity. Column nearly as in *S. gracilis.*

Moist woods and banks of rivers; also on mountains: frequent north and west of Catskill, but not found in the lower part of the Hudson valley. *Fl.* June. The characters of this plant seem to be pretty constant. It was first noticed nearly thirty years ago by Mr. Rafinesque, who collected it with Mr. Knevels, on the Catskill mountains (not near Fishkill as stated in the description of Mr. R. above quoted), where it flowers in June. Mr. Oakes considers it identical with *S. æstivalis* of Europe.

13. GOODYERA. *R. Brown in hort. Kew.* (ed. 2.) 5. *p.* 198; *Lindl. Orchid. p.* 492. *GOODYERA.*

[In honor of JOHN GOODYER, an old English botanist.]

Flower ringent. Calyx herbaceous; the upper sepal united with the petals and vaulted; the two lateral ones supporting the saccate entire lip. Column small, straight: stigma membranaceous, rounded or rostrate. Anther dorsal. Pollen-masses 2, consisting of angular grains. — Rhizoma creeping. Leaves more or less ovate, radical. Flowers in spikes.

1. GOODYERA PUBESCENS, *R. Brown.* *Rattlesnake Plantain.*

Leaves ovate, reticulate with whitish veins; scape, as well as the sheathing scales and flowers, pubescent; lip roundish-ovate, with a short reflexed acumination; column obscurely 2-toothed at the summit. — *R. Br. l. c.; Nutt. gen.* 2. *p.* 190; *Ell. sk.* 2. *p.* 191; *Torr. compend. p.* 319; *Lindl. collect. bot. t.* 25; *Beck, bot. p.* 343; *Darlingt. fl. Cest. p.* 500; *Bot. mag. t.* 2540; *Hook. fl. Bor-Am.* 2. *p.* 204; *Brit. fl. gard. ber.* 2. *t.* 47. Satyrium repens, *Michx. fl.* 2. *p.* 157 (in part). Neottia pubescens, *Willd. sp.* 4. *p.* 76; *Pursh, fl.* 2. *p.* 590; *Bigel. fl. Bost. p.* 323.

Rhizoma somewhat branching, throwing off thick fleshy fibrous roots. Leaves 1 – 2 inches long, abruptly narrowed at the base into a petiole, of a dark dull green, marked with whitish coarsely reticulated veins. Scape 8 – 12 inches or more in height, terete, pubescent, bearing from 5 – 8 lanceolate scales. Flowers small, greenish white, in a close spike which is from 2 – 4 inches long. Bracts longer than the ovary, lanceolate, acuminate. Sepals broadly ovate, obtuse, concave. Petals obliquely obovate. Lip deeply saccate, with a small abrupt recurved acumination. Anther not mucronate. Summit of the column obscurely 2-toothed and mucronate.

Shady fertile woods : frequent. *Fl.* July – August.

2. GOODYERA REPENS, *R. Br.* *Smaller Goodyera.*

Leaves ovate-lanceolate, obscurely reticulate ; scales and flowers slightly pubescent ; lip ovate, with an oblong obtuse acumination ; column acutely 2-toothed at the summit.—*R. Brown, l. c.* ; *Nutt. gen.* 2. *p.* 190 ; *Torr. compend. p.* 319 ; *Beck, bot. p.* 343 ; *Hook. fl. Bor.-Am.* 2. *p.* 203. Satyrium repens, *Linn. sp.* 2. *p.* 945 ; *Michx. fl.* 2. *p.* 157 (in part). Neottia repens, *Willd. sp.* 4. *p.* 76 ; *Pursh, fl.* 2. *p.* 589 ; *Bigel. fl. Bost. p.* 323.

Rhizoma creeping and branching. Leaves 1 – 2 inches long, acute, entirely green, or much less reticulated than in the preceding species, tapering at the base into a petiole. Scape slender, bracteate. Spike 2 – 3 inches long ; the bracts and flowers more or less pubescent. Sepals ovate, obtuse. Petals oblong. Lip moderately saccate, somewhat fleshy, with a rather long slightly recurved acumination. Stigma with 2 teeth or short horns at the summit.

Shady woods in the northern counties, and on the higher parts of the Catskill mountains. *Fl.* July and August. Our specimens from the northern part of the State agree very well with the European *G. repens*, but the Catskill plant differs in several points. The anther is distinctly mucronate, and the summit of the column terminates in two long subulate processes.

14. LISTERA. *R. Brown in hort. Kew.* (ed. 2.) 5. *p.* 201 ; *Lindl. Orchid. p.* 455. *TWAYBLADE.*

[In honor of Dr. MARTIN LISTER, a learned British naturalist.]

Sepals and petals somewhat equal, spreading or reflexed. Lip mostly pendulous, 2-lobed or 2-cleft. Column short, wingless ; the beak rounded. Anther dorsal, ovate. Pollen powdery. — Stem mostly with 2 opposite leaves. Flowers small, in a slender spike.

1. LISTERA CORDATA, *R. Brown.* *Heart-leaved Twayblade.*

Stem with two cordate opposite leaves about the middle ; column very short, without a crest ; sepals ovate-oblong ; lip linear, about 2½ times longer than the sepals, with a single tooth on each side at the base, cleft to near the middle, the segments linear. — *R. Br. l. c.* ; *Nutt. gen.* 2. *p.* 190 ? ; *Torr. compend. p.* 321 ; *Beck, bot. p.* 344 ; *Hook. fl. Bor.-Am.* 2. *p.* 204. Ophrys cordata, *Linn. sp.* 2. *p.* 946 ; *Michx. fl.* 2. *p.* 155. Epipactis cordata,

Willd. sp. 4. *p.* 88. E. convallarioides, *Pursh, fl.* 2. *p.* 591 ; *Bigel. fl. Bost. p.* 323, not of *Swartz.*

Root consisting of thick horizontal branching fibres. Stem 4 – 8 inches high, 4 – 5-angled, almost filiform, with one or two small scales at the base. Leaves roundish-cordate, sessile, half an inch long ; sometimes there is a third leaf above the other two. Peduncles slightly pubescent, usually with a single small scale. Spike 10 – 20-flowered ; the flowers minute, on slender pedicels which are about a line in length : bracts minute, ovate. Sepals greenish, elliptical-ovate. Petals and lip pale dull purple. Lip with 2 small subulate spreading teeth near the base : segments slender, acute.

Sphagnous swamps : frequent. June – July. This plant seems to be identical with the *L. cordata* of Europe, but in the Southern States it is replaced by a nearly allied species, the *L. Elliottii*, Hook. The latter extends as far north as the neighborhood of Philadelphia, in New-Jersey. It is the L. convallarioides, *Bart. fl. N. Am.* 2. *t.* 39. *f.* 1, and probably also L. cordata, *Nutt.*

TRIBE VI. *CYPRIPEDIEÆ. Lindl.*

Anthers 2, *with a large dilated lobe* (*abortive stamen*) *between them.*

15. CYPRIPEDIUM. *Linn. ; Endl. gen.* 1618. *LADY'S-SLIPPER.*

[From the Greek, *Kypris*, Venus, and *podion*, a shoe ; i. e. *Venus's slipper.*]

The two outer sepals usually combined. Lip large and inflated. Column short, cernuous, 3-lobed, the lateral lobes antheriferous underneath ; the middle lobe (abortive stamen or "appendage of the column") dilated and petaloid. Pollen farinaceous. — Root consisting of thick fibres. Flowers solitary or few, large and showy.

1. CYPRIPEDIUM PUBESCENS, *Swartz.* *Large Yellow Lady's-slipper.*

Stem leafy ; sepals lanceolate ; lip shorter than the petals, convex and gibbous above and below, laterally compressed ; sterile stamen triangular, acute (*Hook.*). — *Swartz in act. acad. Holm.* 1800 ; *Willd. hort. Berol.* 1. *t.* 13 ; *Pursh, fl.* 2. *p.* 594 ; *Bart. fl. N. Am.* 3. *t.* 74 ; *Ell. sk.* 2. *p.* 507 ; *Beck, bot. p.* 351 ; *Darlingt. fl. Cest. p.* 513 ; *Hook. in bot. mag. t.* 3024. A, *and fl. Bor.-Am.* 2. *p.* 205.

Root consisting of numerous thick fibres. Stem 1 – 2 feet high, simple, pubescent. Leaves 4 – 7 inches long, ovate and ovate-lanceolate, acuminate, pubescent on both sides, contracted and sheathing at the base. Flowers solitary or in pairs, with a large foliaceous bract at the base. Sepals and petals greenish stained with purple, $1\frac{1}{2}$ – $2\frac{1}{2}$ inches long. Upper sepal rather broadly lanceolate ; the two lower ones commonly united nearly to the tip, but sometimes distinct. Petals lanceolate-linear, undulate and twisted. Lip yellow, 1 – $1\frac{1}{2}$ inch long, somewhat obovoid, much inflated.

Moist shady woods, and in swamps. *Fl.* May – June.

2. CYPRIPEDIUM PARVIFLORUM, *Salisb.* *Smaller Yellow Lady's-slipper.*

Stem leafy; sepals broadly ovate; lip shorter than the petals, flattish above and below; sterile stamen triangular, acute (*Hook.*). — *Salisb. in Lin. trans.* 1. *p.* 77. *t.* 2. *f.* 2; *Pursh, fl.* 2. *p.* 594; *Bigel. fl. Bost. p.* 327; *Ell. sk.* 2. *p.* 507; *Hook. in bot. mag. t.* 3024, *and fl. Bor.-Am.* 2. *p.* 205. C. Calceolus, *Michx. fl.* 2. *p.* 161.

Root consisting of thick fibres. Stem about a foot and a half high, pubescent. Leaves 4 – 6 inches long, ovate, clasping at the base, pubescent. Flowers solitary or in pairs. Sepals ovate-lanceolate, purplish brown mixed with green. Petals much narrower and rather larger, undulate and twisted, green, spotted with purplish brown, or sometimes wholly purplish. Lip 1 – 1½ inch long, somewhat flattened above and below, the sides swelling out.

Woods, swamps, and hill sides: not common. May – June.

This and the preceding species are very nearly allied, and many of our botanists do not consider them distinct. Since my attention has been particularly directed to these plants, I have had no opportunities of comparing them in the living state. The diagnostic characters given above are those of Hooker, who has no doubt (having examined cultivated specimens) that they are perfectly distinct.

3. CYPRIPEDIUM SPECTABILE, *Salisb.* *Showy Lady's-slipper.*

Stem leafy; sepals somewhat equal, ovate, obtuse, longer than the flat lanceolate petals; lip longer than the petals; sterile stamen cordate-ovate, obtuse. — *Salisb. in Linn. trans.* 1. *p.* 78. *t.* 3. *f.* 3; *Willd. sp.* 4. *p.* 143; *Pursh, fl.* 2. *p.* 594; *Bigel. fl. Bost. p.* 328; *Ell. sk.* 2. *p.* 509; *Bart. fl. N. Am.* 2. *t.* 65; *Torr. compend. p.* 523; *Beck, bot. p.* 352; *Lindl. in bot. reg. t.* 1666; *Hook. fl. Bor.-Am.* 2. *p.* 205. C. album, *Ait. Kew.* (ed. 1.) 3. *p.* 303. C. Canadense, *Michx. fl.* 2. *p.* 161. C. calceolus, *Linn. sp.* (ed. 2.) 2. *p.* 1347.

Root consisting of numerous thick fleshy fibres. Stem 1 – 2 feet high, pubescent (as are likewise the leaves), stout. Leaves ovate, acuminate, 3 – 6 inches long and 2 – 3 inches wide, nerved and plaited, with a pretty strong nerve close to the margin all around. Flowers solitary or two (sometimes 3) together, very large. The two lower sepals united their whole length and appearing like a single sepal, which resembles the upper one; both white like the narrower petals. Lip much inflated, more than an inch long, variegated with stripes of purple and white.

Swamps, and sometimes in woods: rather rare. June – July.

4. CYPRIPEDIUM ACAULE, *Ait.* *Noah's Ark. Purple Lady's-slipper.*

Leaves 2, radical, oblong; scape leafless, one-flowered; sepals ovate-lanceolate, about the length of the linear petals; lip with a longitudinal cleft in front; sterile stamen roundish-

rhomboid, acuminate, deflected. — *Ait. Kew.* (ed. 1.) 3. *p.* 161 ; *Michx. fl.* 2. *p.* 161 ; *Bot. mag. t.* 192 ; *Bigel. fl. Bost. p.* 327 ; *Torr. compend. p.* 323 ; *Beck, bot. p.* 352 ; *Darlingt. fl. Cest. p.* 514. C. humile, *Salisb. l. c.* 1. *t.* 3. *f.* 4 ; *Willd. sp.* 4. *p.* 144 ; *Pursh, fl.* 2. *p.* 595 ; *Bigel. fl. Bost. p.* 327 ; *Ell. sk.* 2. *p.* 509 ; *Bart. fl. N. Am.* 3. *t.* 83 ; *Hook. fl. Bor.-Am.* 2. *p.* 204.

Leaves nearly radical, 3 – 6 inches long, pubescent, obtuse or with a short acumination, at first erect, but finally spreading. Scape 8 – 12 inches high. Flower larger than in the preceding species ; the bract at its base large, linear-lanceolate. Sepals elliptical-lanceolate (the two lower ones united their whole length), shorter than the lip, and, like the petals, greenish mixed with purple. Lip $1\frac{1}{2}$ – 2 inches long, somewhat obovoid, purple, veined, pendulous, with a shallow fissure or indentation in front. Sterile stamen acuminate, keeled inside. Capsule elliptical-oblong, about an inch and a half in length.

Woods, in both dry and moist situations : not rare. *Fl.* May. *Fr.* August.

5. CYPRIPEDIUM ARIETINUM, *R. Brown.* *Ram's-head.*

Stem leafy ; lower sepals distinct, linear, upper one ovate-lanceolate ; petals linear ; sterile stamen orbicular-spatulate ; lip acute. — *R. Brown in hort. Kew.* (ed. 2.) 5. *p.* 222, and *in bot. mag. t.* 1569 ; *Pursh, fl.* 2. *p.* 595 ; *Nutt. gen.* 2. *p.* 199 ; *Bigel. fl. Bost. p.* 328 ; *Torr. compend. p.* 323. Cryosanthes borealis, *Raf. in jour. de phys.* 79. *p.* 102. Arietinum Americanum, *Beck, bot. p.* 352.

Stem 6 – 10 inches high, sheathed with scales below, the upper part leafy, slightly pubescent. Leaves 3 or 4, elliptical-lanceolate, 2 – 3 inches long, nearly smooth. Flower solitary, much smaller than in any of the preceding species. Sepals and petals about three-fourths of an inch long, greenish brown. Lip red and white, reticulated, the lower part ending in a conical point or short obtuse spur.

Near Oneida lake (*Dr. Gray*) ; Oneida county (*Dr. Douglas & Dr. Whaley*) ; Amsterdam, Montgomery county (*Mr. J. D. B. Skillman*). This very rare plant was first found near Montreal, about forty years ago ; and since that time, one new station for it has been discovered in British America, and about half a dozen in the United States. The flower has been compared in shape to a ram's head, the petals representing the horns.

Order CXIII. HYPOXIDACEÆ. *R. Brown.* The Star-grass Tribe.

Perianth regular, 6-parted, petaloid, persistent. Stamens 6 : anthers introrse, erect. Ovary cohering with the tube of the perianth (or inferior), 3-celled, with numerous ovules in each cell : style simple : stigmas 3, or united. Fruit dry and capsular or baccate, indehiscent, 3- (or by abortion one-) celled, several- or many-seeded. Seeds roundish. Embryo straight, in the axis of fleshy albumen.

1. HYPOXIS. *Linn.; Endl. gen.* 1264. *STAR-GRASS.*

[From the Greek, *hypo*, beneath, and *oxys*, sharp; the base of the fruit being acute.]

Segments of the perianth persistent. Capsule 3-celled, elongated, crowned with the withered perianth, many-seeded. — Perennial herbs, of various habit, and probably including more than one genus; the North American species with linear radical leaves, and 2 – 4-flowered scapes.

1. Hypoxis erecta, *Linn.* *Common Star-grass.*

Hairy; leaves linear and grass-like; scape mostly shorter than the leaves, 3 – 4-flowered; the flower somewhat umbellate. — *Linn. sp.* (ed. 2.) 1. *p.* 439; *Bot. mag. t.* 710; *Pursh, fl.* 1. *p.* 224; *Ell. sk.* 1. *p.* 396; *Bart. fl. N. Am.* 1. *t.* 35. *f.* 1; *Torr. fl.* 1. *p.* 342; *Bigel. fl. Bost. p.* 130; *Beck, bot. p.* 355; *Darlingt. fl. Cest. p.* 219. H. Carolinianum, *Michx. fl.* 1. *p.* 188.

Root bulbous, solid, ovoid. Leaves all radical, about 2 lines wide. Scape 4 – 6 inches high, slender, mostly 4-flowered, rarely one-flowered; the pedicels with subulate bracts at the base. Perianth yellow inside, hairy and greenish outside : segments spreading, oblong, rather obtuse. Stamens much shorter than the corolla, unequal : anthers linear-oblong, the cells separate at each extremity. Style rather shorter than the stamens, triangular : stigmas decurrent on the angles of the style. Capsule 3-celled, not opening. Seeds numerous, ovoid, angular, black.

Dry open woods : common. *Fl.* May – October.

Order CXIV. IRIDACEÆ. *Juss.* The Iris Tribe.

Perianth with the limb 6-parted in a double series, sometimes irregular; the tube adherent to the 3-celled ovary, and usually elongated above it. Stamens 3; the filaments sometimes monadelphous: anthers extrorse. Style single: stigmas 3, dilated or petaloid. Ovary 3-celled, with numerous anatropous ovules. Capsule 3-celled, 3-valved, loculicidal. Seeds roundish, with hard albumen. — Mostly perennial herbs, with flowering stems which spring from rhizomas, bulbs or corms. Leaves equitant. Flowers spathaceous, usually large and showy.

1. IRIS. *Linn.; Endl. gen.* 1226. *IRIS. FLOWER DE LUCE.*

[So named from the beautiful and varied colors of its flowers.]

Perianth 6-cleft; the alternate segments larger and reflexed, the others erect. Stamens distinct. Stigmas 3, very large and petaloid, covering the stamens.—Herbs with large showy flowers, mostly growing in wet places; the rhizoma tuberous and horizontal, rarely bulbous.

1. Iris versicolor, *Linn.* *Blue Flag.*

Stem terete or slightly compressed, more or less flexuous; leaves broadly linear; flowers beardless; ovary obtusely triangular, with the sides flat; capsule oblong, turgid, with rounded angles. — *Linn. sp.* 1. *p.* 39; *Bot. mag. t.* 21; *Pursh, fl.* 1. *p.* 29; *Ell. sk.* 1. *p.* 45; *Bigel. med. bot. t.* 16, *& fl. Bost. p.* 15; *Torr. fl.* 1. *p.* 35; *Beck, bot. p.* 353; *Darlingt. fl. Cest. p.* 13. I. Virginica, *Pursh, l. c.*; *Bot. mag. t.* 703, not of *Linn.*

Rhizoma fleshy and horizontal, throwing down numerous fibrous roots. Stem 2 – 3 feet high, rather stout, simple or sometimes branched, 2 – 6-flowered at the summit. Leaves 12 – 18 inches long, and half an inch or more in breadth. Flowers blue, variegated with green, yellow and white at the base: outer segments of the perianth spatulate; the inner ones narrower. Style short: stigmas very large and resembling petals, ligulate, violet blue, 2-lipped, crenate and 2-lobed at the extremity. Capsule obscurely 3-sided. Seed flat, triangular.

Wet meadows, borders of swamps, etc.: common. May – June. The root, according to Dr. Bigelow, is a violent emetic. In the South its properties seem to be somewhat different: it is there a popular remedy for dropsy. Elliott states that it is decidedly diuretic; the efficacy of the flag being promoted by mixing it with one-fourth part of the root of *Eryngium yuccæfolium*.

2. IRIS VIRGINICA, *Linn.* *Slender Blue Flag.*

Stem terete, slender; leaves narrowly linear; flowers beardless; ovary 3-sided, with prominent angles, each side deeply 2-grooved; capsule triangular, acute at each end — *Linn. sp.* 1. *p.* 39; *Muhl. cat. p.* 4; *Torr. fl.* 1. *p.* 36. I. prismatica, *Pursh, fl.* 1. *p.* 30; *Bigel. fl. Bost. p.* 16; *Bart. fl. N. Am.* 3. *t.* 85; *Beck, bot. p.* 353. I. gracilis, *Bigel. fl. Bost.* (ed. 1.) *p.* 12.

Rhizoma horizontal, tuberous. Stem 1½ – 3 feet high, somewhat flexuous, solid. Leaves about one-fourth or one-third of an inch wide. Flowers 1 – 3 at the summit of the stem, blue, veined with yellow in the middle, about as large as those of *I. versicolor*, but more delicate. Outer segments of the perianth broadly spatulate; inner ones narrower and more lanceolate. The ovary is, by Bigelow, well compared to "a cylinder with three smaller ones attached to its sides." Capsule distinctly triangular.

Borders of brackish marshes, Long Island. *Fl.* June. This plant was sent by Muhlenberg to Sir James E. Smith, who pronounced it *I. Virginica* of the Linnæan herbarium. The *I. Virginica* of most botanists is a mere variety of *I. versicolor*.

2. SISYRINCHIUM. *Linn.; Endl. gen.* 1220. *BLUE-EYED GRASS.*

[From the Greek, *sus*, a hog, and *rhynchos*, a snout; because it was supposed that hogs were fond of rooting it up.]

Spathe 2-leaved, bract-like. Perianth colored, regular; the limb flat, 6-lobed: tube short. Filaments usually monadelphous below. Style short: stigmas 3, filiform and involute. Capsule pedicellate, roundish-triangular, membranaceous. — Roots mostly fibrous. Stem ancipital. Leaves equitant. Flowers small.

1. SISYRINCHIUM BERMUDIANA, *Linn.* *Common Blue-eyed Grass.*

Scape winged, simple or somewhat branched above; leaves narrow and grass-like; spathe 2-valved, the valves mucronate. — *Linn. sp.* 2. *p.* 954.

var. 1. Stem broadly winged; valves of the spathe nearly equal, shorter than the flowers. — S. Bermudiana, *Michx. fl.* 2. *p.* 33; *Ell. sk.* 2. *p.* 152. S. anceps, "*Cavan. diss.* 6. *p.* 345," ex *Pursh, fl. p.* 31; *Bigel. fl. Bost. p.* 256; *Torr. fl.* 1. 42; *Beck, bot. p.* 354; *Darlingt. fl. Cest. p.* 13. S. gramineum, *Lam. enc.* 1. *p.* 403?; *Bot. mag. t.* 464.

var. 2. Stem narrowly winged; valves of the spathe very unequal (often colored), the outer one longer than the flowers. — S. mucronatum, *Michx. l. c.; Pursh, l. c.; Ell. sk. l. c.; Torr. fl. l. c.; Beck, l. c.; Darlingt. l. c.*

Root fibrous. Stems somewhat cespitose, about a foot high, slender, with a winged margin on each side, which is broader in var. 1; when branched, there is a linear bracteal leaf at the bifurcation. Leaves mostly radical or nearly so, variable in breadth, but usually about 2 lines wide; sometimes (particularly in *var.* 2) almost setaceous. Spathe 2-leaved, equitant; the

leaflets linear-lanceolate, tapering to a mucronate point; in *var.* 1, they are about three-fourths of an inch long, somewhat equal, and shorter than the flower, but often longer than the pedicels, sometimes purplish; in *var.* 2, the outer leaf is often $1\frac{1}{4}-2$ inches long, exceeding the flowers, and more frequently tinged with purple or violet. Flowers 2 – 5 from each spathe, opening in succession, fugacious. They are about half an inch in diameter, of a delicate purplish-violet, with a small yellow centre, and are supported on slender pedicels. Segments of the perianth emarginate, with a central cusp. Stamens shorter than the perianth; the filaments at first cohering: anthers linear; the cells distinct at the base. Style closely surrounded by the stamens: stigmas a little spreading. Capsule globose and obscurely 3-sided, the size of a small pea. Seeds about 8 in each cell, in a double row, globose-angular.

In moist meadows, among grass, and in woods. *Fl.* End of May – June. *Fr.* July. The two plants which I have here described as varieties, are considered distinct species by most of our botanists, but there are many intermediate forms which seem to connect them.

ORDER CXV. DIOSCOREACEÆ. *R. Brown.* THE YAM TRIBE.

Flowers mostly diœcious. Perianth 6-cleft or -parted, in a double series. Stamens 6, or sometimes 3. Ovary adherent to the tube of the perianth, 3-celled, with one or two anatropous ovules in each cell: styles 3, united below or distinct. Fruit capsular, often 3-lobed or 3-winged; two of the cells sometimes abortive. Seeds flat, sometimes winged. Embryo minute, lying in a cavity of the cartilaginous albumen. — Twining herbs or undershrubs. Leaves with reticulated veins, petiolate. Flowers inconspicuous.

1. DIOSCOREA. *Plum.; Endl. gen.* 1201; *Griseb. Smil. & Diosc. in Endl. & Mart. fl. Bras. p.* 24. YAM.

[Dedicated to the ancient Greek naturalist DIOSCORIDES.]

Diœcious. STERILE FL. Stamens 6 (3 of them sometimes barren) or only 3: filament subulate: anthers globose-didymous. FERTILE FL. Styles distinct nearly to the base: stigmas linear, spreading. Ovary 3-celled, with 2 ovules in each cell. Capsule membranaceous, 3-celled, triangular, with broad somewhat winged angles. Seeds membranaceously winged. — Twining herbs or undershrubs. Rhizoma tuberous, often very large. Leaves mostly alternate, sometimes opposite, cordate or hastate. Flowers very small, numerous, in axillary panicles or spikes.

1. Dioscorea villosa, *Linn.* *Wild Yam-root.*

Herbaceous ; leaves mostly alternate, sometimes nearly opposite, or rarely in whorls of 4, cordate, acuminate, entire, pubescent underneath, 9 – 11-nerved ; fertile stamens 6. — *Linn. sp.* 2. *p.* 1033 ; *Pursh, fl.* 1. *p.* 251 ; *Bigel. fl. Bost. p.* 368 ; *Ell. sk.* 2. *p.* 704 ; *Torr. compend. p.* 374 ; *Beck, bot. p.* 355 ; *Darlingt. fl. Cest. p.* 567 ; *Hook. fl. Bor.-Am.* 2. *p.* 207. D. paniculata, "*Jacq. ic. t.* 626 ;" *Michx. fl.* 2. *p.* 239.

Rhizoma half an inch in diameter, horizontal, woody, somewhat knotted, with horizontal spurs. Stem 6 – 10 feet long, slender, twining over bushes and other plants, smooth. Leaves 2 – 3 inches long, cordate or truncate at the base, conspicuously acuminate, marked with 9 – 11 strong nerves which diverge from the base and curve towards the apex ; the two lateral ones confluent, more or less pubescent and of a pale grayish color underneath. Flowers very small, pale greenish yellow. *Sterile fl.* in pendulous panicles. Perianth deeply 5 – 6-parted ; the segments ovate, sessile. Stamens much shorter than the perianth : filaments terete : anthers introrse ; the cells roundish, distinct. Abortive ovary minute. *Fertile fl.* in pendulous simple racemes. Segments of the perianth roundish, very short. Abortive stamens 6. Ovary oblong, acutely triangular, 3-celled, with one or two pendulous anatropous ovules in each cell. Styles very short, bifid. Capsule about three-fourths of an inch long, with 3 broad semioval wings, which are of a dull yellowish green color, bordered with brown. Seeds one or two in each cell, flatly lenticular, with a pale broad membranaceous margin. Embryo somewhat pyriform, compressed, situated in a large thin cavity of the firm fleshy albumen, near the hilum.

Thickets, borders of woods, etc. *Fl.* June – July. *Fr.* October.

Group 4. *Flowers with a regular perianth, which is more or less petaloid* (in Juncaceæ, glumaceous) ; *the segments often in a double series. Ovary free. Embryo surrounded by albumen. — Herbs, rarely climbing or shrubby plants.*

Order CXVI. SMILACEÆ. *R. Brown.* The Smilax Tribe.

Flowers perfect or diœcious. Perianth petaloid, regular, 6-parted or 6-leaved in a double series. Stamens 6, hypogynous, or inserted into the perianth : anthers mostly introrse, innate. Ovary free, 3- (or rarely 2-) celled, with one – many ovules in each cell : the ovules either orthotropous, anatropous, or hemitropous : styles 3, distinct to the base, or united into one. Fruit baccate. Seed with horny albumen. — Shrubs (usually climbing), or perennial herbs. Leaves simple, mostly entire, often with reticulated veins. Flowers umbellate, racemose or solitary, usually axillary ; the pedicels often jointed.

TRIBE I. *PARIDEÆ. Bartl.*

Styles distinct. — Leaves mostly with reticulated veins. Flowers terminal.

1. MEDEOLA. *Gronov.; Endl. gen.* 1178. *INDIAN CUCUMBER.*

[From *Medea*, the name of a sorceress; because the plant was thought to possess great medicinal virtues.]

GYROMIA, *Nutt.*

Perianth petaloid, 6-parted, deciduous; the segments revolute. Stamens 6, inserted into the the base of the perianth: anthers linear-oblong, slightly introrse. Ovary 3-celled, with several anatropous ovules in each cell: style 3, filiform, elongated, divaricate, obscurely stigmatose along the upper side. Berry 3-celled; the cells 1 – 3-seeded. Seeds roundish, compressed. — A perennial herb, with a tuberous horizontal rhizoma, simple stem, and verticillate leaves. Flowers terminal, aggregated; the pedicels without bracts.

1. MEDEOLA VIRGINICA, *Linn.* *Indian Cucumber. Cucumber-root.*

Linn. sp. 1. *p.* 339; *Michx. fl.* 1. *p.* 214; *Bot. mag. t.* 1306; *Pursh, fl.* 1. *p.* 244; *Bart. veg. mat. med. t.* 38; *Bigel. fl. Bost. p.* 141; *Ell. sk.* 1. *p.* 425; *Beck, bot. p.* 360; *Hook. fl. Bor.-Am.* 2. *p.* 179. Gyromia Virginica, *Nutt. gen.* 1. *p.* 238; *Torr. fl.* 1. *p.* 374; *Darlingt. fl. Cest. p.* 234; *Kunth, enum.* 4. *p.* 277.

Rhizoma oblong, white, 1 – 2 inches long, fleshy. Stem about a foot and a half high, clothed with a brownish deciduous wool. Leaves in two whorls, with 3 principal nerves and intermediate reticulated and branching veins; the lower whorl above the middle of the stem, consisting of 6 – 8 (sometimes 5 or 9) oblong-lanceolate acuminate leaves; the upper whorl of 2 – 3 smaller ovate leaves, which are often stained with crimson when the plant is in fruit. Peduncles 3 – 6 (sometimes more), about half an inch long, arising from the centre of the upper whorl, and recurved between the leaves. Perianth pale greenish yellow; the segments oblong, obtuse. Stamens shorter than the perianth, erect: filaments slender, smooth: anthers obtuse. Styles sometimes 4, purple, longer than the stamens, grooved and slightly glandular along the upper side. Ovary roundish, with about 4 ovules in each cell in a double series. Berry globose, dark purple: seeds compressed, somewhat 3-sided, seldom more than a single perfect one in each cell.

Moist woods and shady places, usually in rich soil: frequent. *Fl.* May – June. *Fr.* September. The reputed medicinal virtues of this plant are altogether imaginary. The flavor of the root or rhizoma, in a slight degree, resembles that of cucumbers. It was shown long ago by Michaux, that the African *M. asparagoides* belonged to a different genus from this; but *M. Virginica* being the original species, the generic name of Gronovius must be retained for the North American plant.

2. TRILLIUM. *Mill.; Endl. gen.* 1177. *THREE-LEAVED NIGHTSHADE.*

[From the Latin *trilix*, triple; most parts of the plant being in threes.]

Calyx of 3 spreading sepals. Petals 3. Stamens 6: anthers elongated, linear, introrse. Ovary 3-celled, with several anatropous ovules in a double series: styles 3, usually distinct, or rarely united at the base, spreading or recurved, stigmatose on the inside. Berry ovoid and somewhat 3-sided, 3-celled. Seeds several in each cell, obovoid or roundish; the raphe tumid. Embryo minute, in fleshy dense albumen. — Perennial smooth herbs, with a tuberous abrupt rhizoma abounding in starch, and numerous thick fibrous roots. Stem simple, with 3 reticulately veined leaves in a whorl at its summit, from the centre of which arises a large solitary pedunculate (or rarely sessile) flower.

1. TRILLIUM ERYTHROCARPUM, *Michx. Red-berried Three-leaved Nightshade.*

Leaves ovate, acuminate, obtuse at the base, abruptly contracted into a short petiole; peduncle somewhat erect; petals varying from ovate to ovate-lanceolate, undulate on the margin, acute, recurved, nearly twice as long as the lanceolate sepals. — *Michx. fl.* 1. *p.* 216; *Ell. sk.* 1. *p.* 428; *Nutt. gen.* 1. *p.* 239; *Torr. fl.* 1. *p.* 375; *Bot. mag. t.* 3002; *Beck, bot. p.* 360; *Hook. fl. Bor.-Am.* 2. *p.* 180. T. pictum, *Pursh, fl.* 1. *p.* 244; *Bigel. fl. Bost. p.* 142. T. undulatum, *Willd. hort. Berol.* 1. *p.* 55.

Stem 8 – 12 inches high. Leaves 3 – 5 inches long, rounded at the base; the petiole from one-third to half an inch in length, 3-nerved, with numerous reticulated veins. Peduncle 1 – 2 inches long, inclined to one side. Sepals rather acute. Petals white, with purplish veins toward the base. Berry ovoid, obtusely triangular, scarlet; the cells many-seeded. Seeds globose-ovoid, reddish brown, striate; the raphe prominent and fleshy.

Shady woods and swamps: not rare in the northern and western counties. *Fl.* May. *Fr.* August.

2. TRILLIUM CERNUUM, *Linn.* *Nodding Three-leaved Nightshade.*

Leaves dilated, rhomboid, acuminate, nearly sessile; peduncle short, recurved, the flower pendulous; petals ovate, acuminate, flat, a little longer than the ovate-lanceolate acuminate sepals. — *Linn. sp.* 1. *p.* 339; *Bot. mag. t.* 945; *Pursh, fl.* 1. *p.* 245; *Nutt. gen.* 1. *p.* 239; *Bart. fl. N. Am.* 2. *t.* 40; *Torr. fl.* 1. *p.* 376; *Bigel. fl. Bost. p.* 141; *Beck, bot. p.* 361. T. pendulum, *Muhl. in Willd. hort. Berol.* 1. *t.* 35; *Torr. fl. l. c.; Beck, l. c.; Darlingt. fl. Cest. p.* 235.

Stem 9 – 15 inches high. Leaves $2\frac{1}{2}$ – 4 inches long, the breadth often equal to the length, with a short acumination; the base abruptly contracted into a very short petiole. Peduncle 6 – 8 lines long, recurved so that the flower is partly concealed by the leaves. Sepals three-fourths of an inch long. Petals white. Stamens shorter than the styles: anthers about the

length of the linear-subulate filaments : connective scarcely produced beyond the apex. Styles distinct to the base, stigmatose the whole length on the inside. Berry ovoid, obscurely 3-sided, nearly three-fourths of an inch in diameter, and dark purple when mature. Seeds oblong-ovoid, striate, purple ; the raphe thick and fleshy.

Moist shady woods. Near Troy (*Dr. Aikin*). *Fl.* May. *Fr.* August.

3. TRILLIUM ERECTUM, *Linn.* *False Wakerobin.*

Leaves broadly rhomboid, acuminate, sessile ; peduncle inclined, the flower a little nodding ; petals ovate, acute or acuminate, flat, spreading, usually a little longer than the ovate lanceolate sepals. — *Linn. sp.* 1. *p.* 340 ; *Pursh, fl.* 1. *p.* 245 ; *Ell. sk.* 1. *p.* 427 ; *Torr. fl.* 1. *p.* 376 ; *Beck, bot. p.* 361 ; *Hook. fl. Bor.-Am.* 2. *p.* 180.

var. 1, *atropurpureum :* petals dark purple. *Pursh, l. c.* T. atropurpureum, *Bot. mag. t.* 470. T. rhomboideum, *var.* atropurpureum, *Michx. fl.* 1. *p.* 215. T. fœtidum, *Salisb. parid. Lond. t.* 35.

var. 2, *album :* petals white. *Pursh, l. c. ; Ell. sk. l. c. ; Torr. fl. l. c. ; Beck, l. c. ; Hook. l. c.* T. rhomboideum, *var.* album, *Michx. l. c.*

var. 3, *flavum :* petals white.

Stem 10 – 15 inches high, rather stout. Leaves mostly broader than long, variable in size, with a short abrupt acumination. Peduncle 1 – 3 inches long, inclined more or less to one side. Flower 1 – 2½ inches in diameter, of an unpleasant odor. Stamens and styles as in the preceding species. Ripe fruit not seen.

Shady moist woods : *var.* 1, frequent in most parts of the State : *var.* 2, western counties, particularly along the Mohawk, where it is more common than the preceding form : *var.* 3, Hamilton, Madison county, and Norwich, Chenango county : frequent (*Dr. Douglas*). *Fl.* May.

4. TRILLIUM GRANDIFLORUM, *Salisb.* *Large-flowered Trillium.*

Leaves broadly rhomboid-ovate, sessile ; peduncle inclined ; flower somewhat erect ; petals obovate, much longer than the ovate-lanceolate sepals. — *Salisb. parad. Lond. t.* 1 ; *Pursh, fl.* 1. *p.* 246 ; *Ell. sk.* 1. *p.* 427 ; *Nutt. gen.* 1. *p.* 239 ; *Torr. fl.* 1. *p.* 377 ; *Hook. fl. Bor.-Am.* 2. *p.* 180. T. rhomboideum, *var.* grandiflorum, *Michx. fl.* 1. *p.* 216. T. erythrocarpum, *Bot. mag. t.* 835 (not of *Michx.*).

Stem 10 – 15 inches high. Leaves 2 – 4 inches long, acuminate, roundish-rhomboid. Peduncle 1½ – 3 inches long. Sepals usually about two-thirds the length of the corolla. Petals white, often nearly two inches in length, with a short blunt point, or obtuse. Stamens one-third the length of the corolla ; the anthers obtuse : connective not produced at the summit. Styles distinct to the base.

Woods : western and southwestern counties : rare. *Fl.* May.

TRIBE II. *CONVALLARIEÆ. Endl.*

Styles united (except in SMILAX, *in which they are usually distinct nearly or quite to the base).* — *Leaves nerved (except in* SMILAX). *Flowers mostly axillary.*

CONSPECTUS OF THE GENERA.

* Flowers perfect.

3. SMILACINA. Perianth deeply 4 – 6-parted, spreading. Stamens inserted at the base of the segments. Stigmas 2 – 3-lobed. Ovary 2 – 3-celled, with 1 – 2 orthotropous ovules in each cell. — Flowers in a raceme.

1. POLYGONATUM. Perianth tubular, the limb 6-cleft, erect. Stamens perigynous. Ovary 3-celled, with 2 orthotropous horizontal ovules in each cell. — Flowers axillary.

5. CLINTONIA. Perianth 6-leaved, campanulate or somewhat spreading. Stamens hypogynous. Stigma obtuse. Ovary 2-celled, with 2 suspended anatropous ovules in each cell. — Flowers in a terminal umbel.

* * Flowers dioecious.

6. SMILAX. Perianth campanulate-spreading, deeply 6-parted. Stamens inserted at the base of the perianth-segments. Ovary 3-celled, with 1 – 2 orthotropous ovules in each cell: style very short or none: stigmas 3, recurved. Berry mostly 3-celled, 1 – 3-seeded.

3. SMILACINA. *Desf. in ann. du mus. 9. p. 54; Endl. gen. 1183.* *SMILACINA.*

[A diminutive of *Smilax;* to which genus, however, this has but little resemblance.]

Perianth 6- (or rarely 4-) parted; the segments equal, spreading. Stamens equal in number to the segments of the perianth, and inserted at their base: filaments subulate or somewhat dilated: anthers ovate; the cells opening on the outer edge, or somewhat extrorse. Ovary globose, 2 – 3-celled, with 2 orthotropous ovules which are inserted at the inner angle of each cell: style thick, short: stigma obscurely 2 – 3-lobed. Berry globose, pulpy, 1 – 3-seeded. Seed globose when single, hemispherical when there are two or more, brownish, with a conspicuous hilum. Embryo small, at the extremity of dense fleshy or almost horny albumen. — Perennial herbs, with a creeping (often thick and fleshy) rhizoma, and flowers in a simple or compound terminal raceme.

* SMILACINA proper. *Segments of the perianth and stamens* 6.

1. SMILACINA STELLATA, *Desf.* *Star-flowered Solomon's-seal.*

Leaves 7 – 9, oval-lanceolate, acute, somewhat clasping; raceme simple, few-flowered. — *Desf. l. c. p. 52; Pursh, fl. 1. p. 233; Red. Lil. 4. t. 185; Beck, bot. p. 358; Darlingt. fl. Cest. p. 221; Hook. fl. Bor.-Am. 2. p. 176.* Convallaria stellata, *Linn. sp. 1. p. 316; Michx. fl. 1. p. 202; Bot. mag. t. 1043; Torr. fl. 1. p. 354; Bigel. fl. Bost. p. 133.*

Rhizoma thick and fleshy. Stem 9 – 12 inches high, terete, smooth. Leaves usually 8 or 9, 3 – 5 inches long, ciliolate-scabrous on the margin, slightly pubescent on the nerves underneath; the upper surface smooth. Raceme 4 – 9-flowered: pedicels 3 – 8 lines long, each with a minute ovate bract at the base. Flowers about one-third of an inch in diameter, white: segments of the perianth oblong-lanceolate, obtuse, spreading. Stamens about half as

long as the perianth : filaments subulate : anthers oval ; the cells opening laterally. Ovary oblong, 2-celled, with 2 orthotropous ovules in each cell : style about the length of the ovary : stigma slightly 3-lobed. Berry globose, nearly black, 2 – 3-seeded.

Banks of rivers, etc. : frequent in the northern and western part of the State : not seen below the Highlands of the Hudson. *Fl.* May – June. *Fr.* August.

2. SMILACINA TRIFOLIA, *Desf.* *Three-leaved Smilacina.*

Stem about 3-leaved ; leaves oblong-lanceolate, acute, narrowed and somewhat clasping at the base ; raceme simple, few-flowered. — *Desf. l. c. p.* 52 ; *Pursh, fl.* 1. *p.* 233 ; *Beck, bot. p.* 358 ; *Hook. fl. Bor.-Am.* 2. *p.* 175. Convallaria trifolia, *Linn. sp.* 1. *p.* 316 ; *Gmel. fl. Sib.* 1. *p.* 36. *t.* 6 ; *Michx. fl.* 1. *p.* 202 ; *Torr. fl.* 1. *p.* 354 ; *Bigel. fl. Bost. p.* 132.

Rhizoma creeping, jointed. Stem terete, 6 – 8 inches high, smooth. Leaves usually 3, but sometimes only 2, nearly smooth on the margin. Raceme 4 – 6-flowered : pedicels about 2 lines long. Flowers white ; the segments oblong-lanceolate, obtuse, finally reflexed. Stamens about two-thirds the length of the perianth ; anthers oblong, introrse. Ovary triangular-globose, 2-celled, with 2 ovules in each cell : style as long as the ovary : stigma slightly 3-lobed. Berry 2-seeded, black. Seeds globose : radicle remote from the hilum.

Sphagnous swamps : northern and western counties. *Fl.* May. A native also of the northern parts of Europe.

3. SMILACINA RACEMOSA, *Desf.* (Plate CXXX.) *Wild Spikenard.*

Leaves numerous, oval-oblong, acuminate, strongly nerved, pubescent ; raceme compound, paniculate. — *Desf. l. c. p.* 52 ; *Pursh, fl.* 1. *p.* 233 ; *Nutt. gen.* 1. *p.* 234 ; *Ell. sk.* 1. *p.* 395 ; *Beck, bot. p.* 358 ; *Darlingt. fl. Cest. p.* 222 ; *Hook. fl. Bor.-Am.* 2. *p.* 176. S. ciliata, *Desf. l. c. ; Pursh, l. c.* Convallaria racemosa, *Linn. sp.* 1. *p.* 315 ; *Bot. mag. t.* 399 ; *Michx. fl.* 1. *p.* 202 ; *Bigel. fl. Bost. p.* 133 ; *Torr. fl.* 1. *p.* 354. "Majanthemum racemosum, *Link, enum.* 1. *p.* 343."

Rhizoma creeping, thick and fleshy. Stem 18 inches to 2 feet high, slightly angular, a little flexuous, smoothish below, pubescent above. Leaves 4 – 6 inches long and 2 inches or more in breadth, conspicuously acuminate ; three of the nerves stronger than the others, and all of them pubescent underneath ; the margin minutely ciliate. Flowers small, white, sweet-scented, very numerous, in an oblong panicled compound raceme, the divisions alternate and pubescent : pedicels about a line long. Segments of the perianth spreading, oblong. Stamens about as long as the perianth : filaments flat and rather broad : anthers ovate-sagittate. Ovary ovoid-globose, 3-celled ; the cells with 2 ovules : style very short, thick : stigma slightly 3-lobed. Berries red, dotted, somewhat translucent when ripe, 1 – 2-seeded. Seeds the size of a peppercorn : embryo remote from the hilum.

Moist grounds, thickets, etc. : frequent. *Fl.* May – June. *Fr.* September.

** MAJANTHEMUM, *Mœnch* (*Smilacina*, Raf.). *Segments of the perianth spreading.* 1.

4. SMILACINA BIFOLIA, *Schultes.* *Two-leaved Solomon's-seal.*

Stem mostly 2-leaved; leaves cordate-oblong, nearly sessile or petiolate, usually smooth on both sides; raceme simple, terminal.— *Schult. syst.* 7. *p.* 507; *Darlingt. fl. Cest. p.* 221; *Hook. fl. Bor.-Am.* 2. *p.* 176. S. Canadensis, *Pursh, fl.* 1. *p.* 233; *Bart. fl. N. Am.* 2. *t.* 70; *Nutt. gen.* 1. *p.* 225. Convallaria bifolia, *Linn. sp.* 1. *p.* 316; *Michx. fl.* 1. *p.* 201; *Bigel fl. Bost. p.* 132; *Torr. fl.* 1. *p.* 353. Majanthemum bifolium, *Lam. & DC. fl. Fran.* 3. *p.* 277; *Desf. l. c. p.* 53. M. Canadense, *Desf. l. c.*; *Red. Lil.* 4. *t.* 216. *f.* 1. Styrandra bifolia, *Raf.*; *Beck, bot. p.* 357.

Rhizoma slender, creeping. Stem 4 – 6 inches high, mostly with 2 (sometimes 3) leaves near the summit, and often with a larger radical leaf on a long petiole: stem-leaves about 2 inches long, the lower one (and sometimes also the upper) often furnished with a short petiole. Flowers sweet-scented, having the odor of *Convallaria majalis*, but less intense, white, in an oblong raceme; the pedicels usually by pairs or in threes, 2 – 4 lines long. Segments of the perianth oblong, obtuse, reflexed. Stamens rather shorter than the perianth: anthers oblong, somewhat introrse. Ovary globose, depressed, 2-celled, with 2 ovules in each cell: style a little longer than the ovary, simple, or sometimes cleft nearly to the base; stigma (in the undivided style) more or less distinctly 2-lobed. Berries globose, pale red speckled with crimson, 1 – 2-seeded.

Moist shady woods, particularly around the roots of trees: common. *Fl.* May. *Fr.* August. Our plant does not differ essentially from the European species.

4. POLYGONATUM. *Tourn.*; *Desf. in ann. du mus.* 9. *p.* 48; *Endl. gen.* 1181. *SOLOMON'S-SEAL.*

[From the Greek, *polys*, many, and *gonu*, a knee or joint; in allusion to the numerous joints of the rhizoma.]

Perianth tubular, 6-cleft. Stamens 6; the filaments inserted on the upper part of the perianth. Ovary 3-celled, with 2 – 6 orthotropous ovules in each cell. Berry globose, 3-celled; the cells 1 – 2-seeded. — Perennial herbs. Leaves sessile or clasping, alternate, or sometimes in whorls. Flowers axillary, nodding.

1. POLYGONATUM MULTIFLORUM, *Allioni.* *Common Solomon's-seal.*

Stem nearly terete; leaves ovate-elliptical or elliptical-lanceolate, clasping; peduncles 1 – 6-flowered; filaments smooth, or slightly pubescent; ovules 3 – 6 in each cell of the ovary.— *Desf. l. c. p.* 50? P. multiflorum β., *Hook. fl. Bor.-Am.* 2. *p.* 176. P. multiflorum, *Beck, bot. p.* 359; *Darlingt. fl. Cest. p.* 220. P. pubescens, P. multiflorum, P. canaliculatum, P. angustifolium, P. hirtum, *and* P. latifolium, *Pursh, l. c.*; *Beck, l. c.* P. latifolium,

Desf. l. c. Convallaria biflora, *Walt. fl. Car. p.* 122. C. multiflora, *Michx. fl.* 1. *p.* 202. C. pubescens, *Willd. hort. Berol. t.* 45 ; *Muhl. cat. p.* 35. C. canaliculata, *Willd. l. c.* ; *Bigel. fl. Bost. p.* 134. C. hirta, *Bosc, act. soc. hist. nat. Par.?* C. parviflora, *Poir. enc. suppl.* 4. *p.* 29. C. multiflora, C. biflora, C. pubescens, C. canaliculata and C. latifolia, *Torr. fl.* 1. *p.* 356 – 7.

Rhizoma horizontal, creeping, thick and fleshy, marked with scars on the upper side. Stem 1 – 3 feet high, simple, a little curved, terete or slightly angular, smooth. Leaves variable in size and form, but usually more or less ovate or elliptical, 2 – 5 inches long and 1 – 2½ inches wide, acute, usually smooth on both sides, but sometimes pubescent on the nerves underneath. Peduncles half an inch to an inch or more in length, recurved, mostly 2 – 4- (but sometimes 5 – 6-) flowered, rarely one-flowered ; the pedicels 5 – 8 lines long. Perianth tubular and somewhat funnel-form, half an inch to three-fourths of an inch in length, greenish white. Filaments mostly smooth, but sometimes rough or minutely and glandularly pubescent : anthers oblong, sagittate. Style about as long as the perianth : stigma obtuse, somewhat capitate, triangular. Ovary 3-celled, with 3 – 6 ovules. Berry globular, the size of a pea : bluish black, 3- (or by abortion 2-) celled, 3 – several-seeded.

Rocky woods, banks of rivers, etc. *Fl.* June. *Fr.* September. Among my numerous specimens of POLYGONATUM from all parts of the United States, I am unable to distinguish satisfactorily more than one species, and this differs in some respects, but I think not specifically, from *P. multiflorum* of Europe. The latter, however, has more slender flowers, decidedly pubescent filaments, and only 2 ovules in each cell of the ovary.

5. CLINTONIA. *Raf. in jour. phys.* 89. *p.* 102 ; *Beck, bot. p.* 358, not of *Dougl.*

CLINTONIA.

[In honor of the late distinguished Governor DEWITT CLINTON, of New-York.]

Perianth 6-parted to the base, campanulate, deciduous. Stamens 6 : filaments filiform, inserted at the base of the segments of the perianth : anthers linear-oblong, somewhat versatile. Ovary oblong, 2-celled, with 10 – 12 horizontal anatropous ovules in each cell : style filiform, compressed : stigma 2-lobed, compressed. Berry 2-celled, many-seeded. — Perennial herbs, with a creeping rhizoma, 2 – 4 large radical leaves, and the flowers in a simple umbel (rarely solitary) on a scape. Berries blue.

1. CLINTONIA BOREALIS, *Raf.* *Large-flowered Clintonia.*

Umbel 2 – 5-flowered ; pedicels without bracts ; segments of the perianth oblong-lanceolate ; style about as long as the stamens. — *Raf. in Atl. jour. p.* 120 ; *Beck, l. c.* Dracæna borealis, *Ait. Kew.* (ed. 1.) 1. *t.* 5 ; *Muhl. cat. p.* 35 ; *Bigel. fl. Bost. p.* 135. Smilacina borealis, *Gawler in bot. mag. t.* 1403 ; *Pursh, fl.* 1. *p.* 232 ; *Nutt. gen.* 1. *p.* 225 ; *Hook. fl. Bor.-Am.* 2. *p.* 175. Convallaria umbellulata, *Torr. fl.* 1. *p.* 355, not of *Michx.*

Rhizoma rather thick. Leaves usually 3, varying from oval to narrowly oblong and obovate, 4 – 6 inches long, with a short abrupt acumination, hairy-ciliate on the margin, contracted and somewhat clasping at the base, smooth along the midrib, with very numerous fine nerves which are connected by horizontal veins. Scape 6 – 8 inches long, pubescent or nearly smooth, terete. Umbel about 3- (seldom more than 4-) flowered : pedicels half an inch long. Flowers rather longer than the pedicels, yellowish green ; the segments obtuse and a little spreading, ciliate towards the base. Stamens as long as the perianth : filaments smooth, slender : anthers large, attached by the face to the filament about one-third of their length above the base : cells opening laterally their whole length. Ovary oblong, 2-celled ; the ovules in a double row in each cell : style rather thick : stigma more or less oblique, obscurely lobed. Berry globose-oblong, about one-third of an inch in diameter, of a deep clear blue color. Seeds obovoid and angular, reddish brown. Embryo minute, next the hilum. Albumen fleshy and firm.

Moist rocky woods, and swamps ; northern and western parts of the State ; in the Hudson valley. I have not found this plant south of Catskill. *Fl.* June. *Fr.* August. The genus CLINTONIA of Rafinesque, which was founded on this species, is, I now think, sufficiently distinct from its allies, and is therefore adopted in this work, with a new character. The CLINTONIA of D. Don, which was established many years after this, must receive another name. It is almost needless to remark here, that the numerous species of CLINTONIA described by Mr. Rafinesque in his various works, are all mere forms of *C. borealis* and *C. umbellulata.*

2. CLINTONIA UMBELLATA. *Small-flowered Clintonia.*

Leaves oblong-lanceolate, the margin and keel ciliate ; umbel many-flowered ; cells of the berry 2-seeded.— C. ciliata β., *Raf. in jour. de phys.* 89. *p.* 102. C. parviflora, odorata, etc. *Raf. in new fl. N. Am. p.* 82. C. multiflora, *Beck, bot. p.* 358, excl. *syn. Torr. & Bigel.* Convallaria umbellulata, *Michx. fl.* 1. *p.* 202. C. umbellata, *Poir. enc. suppl.* 4. *p.* 30. Smilacina umbellata, *Desf. l. c. p.* 53. *t.* 8 ; *Pursh, fl.* 1. *p.* 232 ; *Nutt. gen.* 1. *p.* 225 ; *Ell. sk.* 1. *p.* 355. S. borealis β., *Gawl. in bot. mag. t.* 1155.

Leaves several (2 – 5), all of them radical or nearly so, 6 – 9 inches long and 1½ inch broad, acute or acuminate ; the margin, and usually also the midrib underneath, ciliate with short weak hairs. Scape mostly longer than the leaves, slender, pubescent. Umbel (or rather corymb) 15 – 30-flowered : pedicels about half an inch long, slender, spreading. Flowers white, odorous, much smaller than in the preceding species. Leaflets of the perianth spatulate-oblong. Stamens hypogynous : filaments somewhat dilated downward : anthers oblong. Ovary ovoid-globose, 2-celled, with two collateral suspended ovules in each cell : style straight, rather stout : stigma truncate, and very slightly 2-lobed.

Jamestown, Chautauque county (*Miss. C. Hazeltine*). This rare plant has been confounded by many of our botanists with the preceding, owing to the imperfect descriptions of the two species in our Floras. The *C. umbellata* is easily distinguished by its numerous white and much smaller flowers.

6. SMILAX. *Tourn.; Endl. gen.* 1184; *Griseb. Smil. et Dioscor. in Endl. & Mart. fl. Bras. p.* 3. GREEN-BRIER. ROUGH BINDWEED.

[From the Greek, *smile*, a grater; most of the species being rough with prickles.]

Flowers dioecious. Perianth campanulate, of 6 leaflets in a double series, somewhat petaloid. Stamens usually 6 (sometimes 5 or 7): filaments short: anthers linear, innate, introrse. Ovary 3-celled; ovules orthotropous, one (rarely 2) suspended from the inner angle of each cell: style very short: stigmas 3, thick and spreading. Berry 3- (or by abortion 1 – 2-) celled, 1 – 3-seeded. Seeds globose. Embryo minute, at the extremity of horny albumen. — Shrubby (rarely herbaceous), twining, and mostly prickly plants. Leaves alternate, reticulately veined, more or less cordate, hastate or ovate: stipules bearing tendrils. Flowers small, in little umbels, which are simple, racemose or somewhat paniculate.

In *Smilax pumila* of Walter, the ovary is only one-celled, with a single ovule.

* *Shrubby.*

1. SMILAX ROTUNDIFOLIA, *Linn.* *Common Greenbrier*, or *Cat-brier.*

Stem nearly terete, the branchlets more or less quadrangular; leaves orbicular-ovate, with a short abrupt acumination, more or less cordate at the base, 5-nerved; prickles stout, distant, straight or slightly recurved; peduncles a little longer than the petiole. — *Linn. sp.* 2. *p.* 1030; *Michx. fl.* 2. *p.* 237; *Pursh, fl.* 1. *p.* 250; *Ell. sk.* 2. *p.* 700; *Bigel. fl. Bost. p.* 368; *Torr. compend. p.* 373; *Beck, bot. p.* 256; *Darlingt. fl. Cest. p.* 566.

Stem 10 – 30 feet or more in length, slender, branching, climbing by numerous tendrils, armed with strong sharp prickles, which are about one-third of an inch in length, and dark colored towards the tip. Leaves 2 – 3 inches long; the old ones on the main stem larger, often broader than long, and somewhat coriaceous; the short acumination sometimes abruptly inflexed, so that the leaf appears notched: petioles 4 – 7 lines long, margined with the adherent stipules, from the summit of which, on each side, springs a strong tendril. Peduncles slender, 6 – 12-flowered, about the length of the pedicels. Flowers yellowish green: leaves of the perianth equal, oblanceolate. Stamens a little shorter than the ovary: anthers linear-oblong. Berries spherical, about one-fourth of an inch in diameter, bluish black and covered with a glaucous bloom, usually perfecting but a single seed.

Moist thickets and woods: very common. *Fl.* June. *Fr.* October.

2. SMILAX HISPIDA, *Muhl.* *Hispid Greenbrier.*

Stem terete, green, the lower part very hispid, with slender rather soft prickles; branchlets angular; leaves ovate, acute, mostly cordate at the base, 5-nerved, smooth and green on both sides, the margin very minutely erose-crenulate; peduncles twice as long as the petioles. — *Muhl. cat. p.* 97, and *fl. Lancast. ined. p.* 785.

Stem climbing; the upper part either unarmed, or very sparingly furnished with short slender prickles. Leaves more or less broadly ovate, membranaceous, 1½ – 2½ inches long, mostly somewhat cordate, acute and mucronate; the margin (under a lens) finely eroded and somewhat crenulate. Peduncle an inch or more in length; the umbel 4 – 6-flowered. Sterile flowers resembling those of the preceding species. Fertile flowers about 6 in an umbel. Sterile filaments 6, subulate. Stigmas clavate, obtuse. "Berries black, with 1 – 3 globose reddish seeds." *Muhl.*

Oneida county (*Dr. Knieskern*), and probably elsewhere in the western part of the State. *Fl.* June. The fertile flowers are described from Michigan specimens. In the manuscript work of Muhlenberg, noticed above, the *S. rotundifolia* of Willdenow is quoted as a synonym.

3. Smilax spinulosa, *Smith.* *Spinulose Greenbrier.*

Stem terete, very prickly with slightly recurved and rigid but rather slender prickles; leaves ovate-lanceolate (on young plants often somewhat panduriform), smooth on both sides, glaucous underneath, 3 – 5-nerved. — *J. E. Smith in Muhl. fl. Lancast. ined. p.* 788. S. Sarsaparilla, *Linn. sp.* 1. *p.* 1030 (in part)?

Stem 3 – 6 feet long, trailing or sometimes climbing, armed with numerous prickles, particularly on the lower part. Leaves 2 – 3 inches long, somewhat coriaceous, cuspidate, often dilated at the base, and sometimes also contracted in the middle. Flowers and fruit not seen.

Dry sandy woods and thickets: Long Island. This is by no means a rare plant, as it occurs in many places on Long Island, and I have seen it also in New Jersey, but have not yet detected it in flower or fruit.

** Coprosmanthus. *Stem herbaceous, not prickly. Ovules 2 in each cell of the ovary.*

4. Smilax herbacea, *Linn.* *Carrion-flower.*

Stem erect or climbing, nearly simple, angular; leaves ovate, acuminate (or sometimes rather obtuse); peduncles very long. — *Linn. sp.* 2. *p.* 1030; *Michx. fl.* 2. *p.* 238; *Pursh, fl.* 1. *p.* 251; *Nutt. gen.* 2. *p.* 228; *Ell. sk.* 2. *p.* 703; *Torr. compend. p.* 374; *Beck, bot. p.* 357; *Darlingt. fl. Cest. p.* 566. S. peduncularis, *Muhl. in Willd. sp.* 4. *p.* 786; *Pursh, l. c.*; *Nutt. l. c.*; *Ell. l. c.*; *Bigel. fl. Bost. p.* 368; *Torr. compend. l. c.*; *Beck, l. c.*; *Hook. fl. Bor.-Am.* 2. *p.* 173. *t.* 187. *f.* B. S. pulverulenta, *Michx. fl.* 2. *p.* 238. S. lasioneuron, *Hook. l. c. t.* 187. *f.* A.

Perennial. Stem 3 – 6 feet long, climbing by its tendrils, or leaning on other plants, sparingly branched. Leaves variable in size and form, usually ovate, and from 2 – 3 (but sometimes 6) inches long, membranaceous, obtuse, cordate or rather acute at the base, often conspicuously acuminated, at other times with an abrupt point, or obtuse and mucronate, 5 – 9-nerved, smooth on both sides, or pubescent on the veinlets underneath: petiole 1 – 1½ inch long. Tendrils often wanting in many of the petioles. Flowers yellowish green, very fœtid. Peduncles compressed, either shorter or considerably longer than the leaves, usually longer in the sterile than in the fertile plant. Umbel 30 – 40-flowered. Pedicels about half

an inch long. Segments of the perianth oblong-lanceolate. *Sterile fl.* Stamens commonly 6, sometimes 4, 5 or 7, shorter than the perianth : filaments subulate : anthers linear-oblong, finally revolute. *Fertile fl.* Ovary globose-ovoid, 3-celled, with two collateral orthotropous ovules suspended from the inner angle of each cell near the summit : stigmas 3, spreading, linear, obtuse and notched at the extremity. Berry the size of a pea, bluish black when ripe, 2 – 4-seeded. Seeds globose or somewhat compressed, dull reddish purple.

Meadows, thickets and borders of woods. *Fl.* May – June. *Fr.* September. I have not been able to find any permanent characters for distinguishing more than one herbaceous species of SMILAX.

ORDER CXVII. LILIACEÆ. *Juss.* THE LILY TRIBE.

Perianth colored, 6-parted or 6-leaved, regular. Stamens 6, hypogynous, or inserted into the base of the perianth-leaflets : anthers introrse. Ovary not adherent, 3-celled : styles united : stigma often 3-lobed. Fruit usually capsular, sometimes baccate. Seeds few or many in each cell. Embryo small, in the axis of copious fleshy albumen : radicle next the hilum. — Herbs with the flowering stems springing from bulbs, tubers, rhizomas, or with fasciculate or fibrous roots. Leaves simple, entire, mostly narrow. Inflorescence various : flowers often showy.

SUBORDER I. TULIPACEÆ. *Endl.* THE TULIP TRIBE.

Leaflets of the perianth distinct, or slightly coherent at the base. Stamens hypogynous. Fruit capsular. Seeds mostly compressed ; the testa pale or brown, spongy or hard.— Stems arising from bulbs.

1. LILIUM. *Linn.; Endl. gen.* 1098. *LILY.*

[Said to be derived from the Celtic word *li*, white ; that being the color of one of the principal species.]

Perianth 6-leaved, funnelform-campanulate ; the leaflets somewhat cohering at the base, spreading or revolute, with a nectariferous furrow at the base. Stamens 6, adhering to the base of the perianth. Ovary 3-celled, with numerous anatropous ovules horizontally arranged in a double series : style elongated, somewhat clavate : stigma slightly 3-lobed. Capsule oblong, 3-celled, loculicidal. Seeds numerous, in a double series, flatly compressed. Embryo straight or curved, in the axis of fleshy albumen. — Herbs, with simple stems springing from bulbs, and alternate or verticillate leaves. Flowers large and showy, erect or nodding.

1. LILIUM PHILADELPHICUM, *Linn.* *Red Lily.*

Leaves verticillate, linear-lanceolate ; stem 1 – 3-flowered ; flower erect, campanulate, spreading, the segments unguiculate. — *Linn. sp.* (ed. 2.) 1. *p.* 435 ; *Bot. mag. t.* 519 ; *Pursh, fl.* 1. *p.* 229 ; *Ell. sk.* 1. *p.* 387 ; *Bigel. fl. Bost. p.* 136 ; *Torr. fl.* 1. *p.* 348 ; *Beck, bot. p.* 364 ; *Darlingt. fl. Cest. p.* 224 ; *Kunth, enum.* 4. *p.* 263.

Stem 2 – 3 feet high, terete. Leaves 2 – 3 inches long and 4 – 6 lines wide, acute ; the lowest ones scattered, the upper in whorls of 5 – 8, and occasionally scattered intermediate ones. Flowers mostly solitary, but often 2 and sometimes as many as 3, pedunculate. Perianth orange-red, with purplish spots inside towards the base, about 2½ inches long ; the segments or leaflets with conspicuous claws, lanceolate. Stamens nearly the length of the perianth : anthers large and linear. Style slender : stigma large and thick. Capsule oblong, an inch or more in length, obtusely triangular.

Bushy places, borders of woods, etc. : frequent. *Fl.* June – July. *Fr.* September. This and the two following species are highly ornamental plants, and deserve a place in every garden.

2. LILIUM CANADENSE, *Linn.* *Wild Yellow Lily.*

Leaves mostly verticillate, lanceolate, strongly nerved, the nerves rough underneath ; peduncles 2 – 3 or sometimes more, elongated ; flowers nodding, campanulate, the segments slightly revolute. — *Linn. sp.* 1. *p.* 303 ; *Michx. fl.* 1. *p.* 198 ; *Bot. mag. t.* 300 and 858 ; *Ell. sk.* 1. *p.* 388 ; *Bigel. fl. Bost. p.* 136 ; *Torr. fl.* 1. *p.* 348 ; *Beck, bot. p.* 365 ; *Darlingt. fl. Cest. p.* 224 ; *Kunth, enum.* 4. *p.* 258.

Stem 2 – 3 feet high. Whorls mostly 4 – 6-leaved. Leaves 3 – 4 inches long, the nerves and margin rough with minute cartilaginous processes or short hairs. Peduncles mostly three, sometimes solitary, 3 – 6 inches long, yellow, spotted inside with purple ; the segments sessile, spreading and recurved (but not reflexed) from about the middle.

Moist meadows : frequent. *Fl.* June – July. *Fr.* September.

3. LILIUM SUPERBUM, *Linn.* *Turk's-cap*, or *Superb Lily.*

Leaves mostly verticillate, linear-lanceolate, the nerves often rough underneath ; flowers in a pyramidal raceme, campanulate, nodding ; the segments revolute. — *Linn. sp.* (ed. 2.) 1. *p.* 435 ; *Bot. mag. t.* 936 ; *Red. Lil. t.* 103 ; *Pursh, fl.* 1. *p.* 230 ; *Ell. sk.* 1. *p.* 389 ; *Torr. fl.* 1. *p.* 349 ; *Bigel. fl. Bost. p.* 137 ; *Beck, bot. p.* 365 ; *Darlingt. fl. Cest. p.* 224 ; *Kunth, enum.* 4. *p.* 258.

Stem 3 – 6 feet high. Leaves 5 – 8 in a whorl, 2 – 4 inches long and 6 – 8 lines wide, smooth or roughly pubescent on the nerves underneath. Flowers varying from 3 – 20 or in very luxuriant plants to 30 or 40, arranged in a pyramidal manner or in the form of a chan-

delier. Perianth bright orange, with numerous roundish purple spots; the segments about 3 inches long, tapering to the apex, and revolute when the flower is fully expanded. Stamens, style and stigma nearly as in the first species.

Moist meadows. *Fl.* Latter part of July – August. *Fr.* September. This in favorable situations is a truly magnificent plant. Some botanists regard it as only a variety of the preceding, but its characters seem to be constant.

2. ERYTHRONIUM. *Linn.; Endl. gen.* 1090; *Kunth, enum.* 4. *p.* 216.

DOG'S-TOOTH VIOLET.

[From the Greek, *erythros*, red; probably from the purple spots on the leaves.]

Perianth regular, 6-leaved, campanulate; the segments recurved; the 3 interior with a callous tooth on each side near the base, and a longitudinal groove in the middle. Stamens 6: anthers linear-oblong; the cells opening along the outer edge. Ovary triangular, 3-celled, with numerous anatropous ovules in a double series: style elongated: stigma triangular, entire or 3-parted. Capsule somewhat turbinate or obovate, 3-celled, loculicidal. Seeds ovoid, with a prominent raphe; the apex invested with a loose membranaceous appendage. Embryo minute, next the hilum, in hard fleshy albumen. — Herbs, with a solid bulb. Leaves 2, nearly radical. Scape bearing usually a single nodding flower.

1. ERYTHRONIUM AMERICANUM, *Gawl.* *American Dog's-tooth Violet.*

Leaves elliptical-lanceolate, minutely dotted; peduncle one-flowered; segments of the perianth oblong-lanceolate, rather obtuse; style clavate; stigma entire. — *Gawl. in bot. mag. t.* 1113; *Bigel. med. bot. t.* 58, and *fl. Bost. p.* 137; *Ell. sk.* 1. *p.* 389; *Nutt. gen.* 1. *p.* 223; *Bart. fl. N. Am.* 1. *t.* 33; *Torr. fl.* 1. *p.* 350; *Beck, bot. p.* 365; *Darlingt. fl. Cest. p.* 223; *Hook. fl. Bor.-Am.* 2. *p.* 182; *Kunth, enum.* 4. *p.* 218. E. Dens-canis γ., *Linn. sp.* (ed. 2.) 1. *p.* 437; *Red. Lil. t.* 194. E. Dens-canis, *Michx. fl.* 1. *p.* 198; E. lanceolatum, *Pursh, fl.* 1. *p.* 230.

Bulb ovoid, scaly, situated deep in the ground. Leaves 3 – 8 inches long and 1 – 1½ inch wide, smooth and shining, spotted with dull purple, the apex thickened and rather obtuse. Scape 6 – 10 inches long, naked, recurved near the extremity, and bearing a single large flower. Perianth yellow, spotted near the base; the three outer leaflets recurved from about the middle, tinged with crimson externally: inner ones furnished with a short obtuse tooth on each side towards the base. Stamens about half the length of the perianth: filaments subulate, as long as the oblong-linear anthers. Ovary obovoid: style triangular, gradually thickened upward: stigmas 3, occupying the summit of the style, but not separating. Capsule obovate, contracted at the base. Seeds numerous, many of them often abortive.

Low moist grounds, and shady thickets. *Fl.* April – May. *Fr.* June.

2. ERYTHRONIUM ALBIDUM, *Nutt.* *White Dog's-tooth Violet.*

Leaves elliptical-lanceolate, not dotted; peduncle one-flowered; leaflets of the perianth narrowly lanceolate, rather obtuse, the inner ones without lateral teeth, somewhat unguiculate; style clavate; stigma 3-cleft. — *Nutt. gen.* 1. *p.* 223; *Torr. fl.* 1. *p.* 350; *Beck, bot. p.* 365; *Kunth, enum.* 4. *p.* 218.

Plant about the size of the preceding. Flowers white with a shade of blue. Style moderately clavate; the stigma distinctly 3-lobed, the lobes spreading or recurved.

Wet meadows near Albany (*Dr. Beck, Dr. Eights*). *Fl.* April – May. It is possible that this is a variety of *E. Americanum;* but I have seen no intermediate forms.

SUBORDER II. ASPHODELEÆ. *Endl.* THE ASPHODEL TRIBE.

Perianth tubular or 6-parted. Stamens hypogynous or inserted into the perianth. Fruit capsular or baccate. Seeds globose or angular; the testa black and crustaceous. — Herbs with the stem springing from bulbs or tubers, or with fasciculate-fibrous roots.

CONSPECTUS OF THE GENERA.

3. ORNITHOGALUM. Leaflets of the perianth several-nerved. Ovules 6 – 8 in each cell. Flowers in corymbose racemes.
4. ALLIUM. Leaflets of the perianth one-nerved. Ovules 2, rarely 3 – 6 in each cell. Flowers umbellate.
5. ASPARAGUS. Stigmas 3. Berry globose. — Branching herbs. Flowers axillary.
6? ALETRIS. Perianth tubular, rugose. Stamens perigynous. Flowers in spikes.

3. ORNITHOGALUM. *Linn.; Endl. gen.* 1132. *STAR OF BETHLEHEM.*

[From the Greek, *ornis, ornithos*, a bird, and *gala*, milk; but the application of the name is uncertain.]

Perianth 6-leaved, petaloid; the leaflets spreading, several-nerved. Stamens 6, hypogynous; filaments subulate above, flattened below, the 3 inner ones often broader. Ovules anatropous, 6 – 18 in each cell of the ovary. Capsule roundish-angular, membranaceous, 3-celled. Seeds few in each cell, roundish or angular, black and rough. Embryo straight. — Bulbous herbs, with radical leaves. Scape naked. Flowers in corymbose racemes.

1. ORNITHOGALUM UMBELLATUM, *Linn.* *Common Star of Bethlehem.*

Corymb few-flowered; the pedicels very long and spreading; filaments lanceolate-subulate. — *Linn. sp.* 1. *p.* 307; *Engl. bot. t.* 130; *Pursh, fl.* 1. *p.* 227; *Torr. fl.* 1. *p.* 348; *Beck, bot. p.* 362; *Darlingt. fl. Cest. p.* 219; *Kunth, enum.* 4. *p.* 362.

Bulb small, ovoid. Leaves all radical, linear, channelled, smooth. Scape about a span high, 6 – 8-flowered. Pedicels 1 – 2 inches long, each with a lanceolate bract at the base. Segments of the perianth oblong-lanceolate, white inside, green bordered with white externally. Stamens shorter than the perianth. Capsule obtusely triangular and somewhat turbinate.

Moist meadows, and borders of fields : frequent in the southern part of the State. *Fl.* May – June. Introduced from Europe.

4. ALLIUM. *Linn.; Endl. gen.* 1137. *ONION, GARLIC, &c.*

[Said to be from the Celtic word *all ;* signifying hot or acrid.]

Perianth 6-leaved or deeply 6-parted, spreading or campanulate ; the segments equal, one-nerved. Stamens 6 : filaments often tricuspidate. Ovary 3-celled, with few (2, very rarely 3 – 6) amphitropous ovules in each cell : style filiform : stigma simple. Capsule 3- (or sometimes one-) celled, loculicidal. Seeds solitary or very few in each cell, ovoid-reniform, black and rough. Embryo curved. — Herbs with a rank odor, springing from bulbs. Leaves mostly radical, fistular or flat. Flowers in a terminal umbel, which is subtended by a 1 – 2-valved spatha.

1. ALLIUM CANADENSE, *Kalm.* *Meadow Garlic.*

Stem terete, leafy at the base ; leaves linear, flat ; umbel few-flowered, bulbiferous ; filaments simple, about as long as the perianth. — *Linn. sp.* 2. *p.* 1195 ; *Michx. fl.* 1. *p.* 194 ? ; *Pursh, fl.* 1. *p.* 223 ; *Ell. sk.* 1. *p.* 385 ; *Torr. fl.* 1. *p.* 340 ; *Bigel. fl. Bost. p.* 130 ; *Beck, bot. p.* 363 ; *Darlingt. fl. Cest. p.* 217 ; *Kunth, enum. p.* 450.

Bulb ovoid, small. Stem 12 – 18 inches high, leafy only at the base. Leaves 8 – 12 inches long, about 2 lines wide, rather obtuse, flattish above, slightly convex underneath. Spathe of 2 broadly ovate acuminate leaves. Umbel sometimes consisting almost wholly of densely aggregated ovoid bulbs, but usually bearing flowers also. Pedicels half an inch long. Perianth pale rose-color ; the leaflets oblong-lanceolate. Filaments much dilated at the base. Style slender : stigma simple, minute.

Moist meadows : not common. *Fl.* May – June.

2. ALLIUM VINEALE, *Linn.* *Wild Garlic. Field Garlic.*

Stem somewhat leafy ; leaves terete, fistulous, channelled above ; umbel often bulbiferous ; stamens longer than the perianth ; filaments alternately tricuspidate, the middle cusp bearing an anther. — *Linn. sp.* 1. *p.* 299 ; *Engl. bot. t.* 1974 ; *Pursh, fl.* 1. *p.* 222 ; *Torr. fl.* 1. *p.* 340 ; *Beck, bot. p.* 363 ; *Darlingt. fl. Cest. p.* 215 ; *Kunth, enum.* 4. *p.* 382.

Bulb ovoid, the size of a hazel nut. Stem $1\frac{1}{2}$ – 3 feet high, slender, smooth, leafy to about the middle. Spathe of two small deciduous leaves. Umbel sometimes bearing bulbs only, but usually producing also several pedicellate flowers ; the pedicels slender, 4 – 6 lines long.

Perianth deep rose-color, mixed with green; leaflets ovate-lanceolate. Stamens exserted: filaments flattened; the 3 interior ones deeply 3-cleft; the two lateral segments naked at the summit. Capsule obtusely triangular.

Meadows and pastures: common. *Fl.* June. *Fr.* August. A pernicious weed, which is very difficult to extirpate when it has once taken possession of a field.

3. ALLIUM TRICOCCUM, *Ait.* *Wild Leek.*

Bulb ovoid; leaves lanceolate-oblong or elliptical, flat; umbel somewhat crowded; leaflets of the perianth oblong, obtuse, about as long as the stamens; filaments simple, dilated downward; cells of the capsule one-seeded. — *Ait. Kew.* (ed. 1.) 1. *p.* 428; *Pursh, fl.* 1. *p.* 223; *Torr. fl.* 1. *p.* 341; *Bigel. fl. Bost. p.* 130; *Beck, bot. p.* 363; *Darlingt. fl. Cest. p.* 217; *Kunth, enum.* 4. *p.* 444.

Bulb about an inch long. Leaves 4 – 8 inches long and 1 – 3 inches wide, acute. Scape naked, 9 – 12 inches high, nearly terete, or sometimes slightly ancipital. Spathe of 2 membranaceous acuminate leaves, deciduous. Umbel globose, about an inch and a half in diameter. Perianth white; the leaflets somewhat spreading. Filaments ovate lanceolate: anthers oblong. Ovary 3-lobed: style about the length of the stamens. Capsule obtusely triangular and somewhat 3-lobed, green. Seeds obovoid, black and shining.

Moist shady woods, in rich soil: not rare in the northern and western part of the State. *Fl.* June – July. *Fr.* August. The leaves of this species wither and disappear early in the season, before the time of flowering. It has a strong resemblance to the *A. ursinum* of Europe.

4. ALLIUM CERNUUM, *Roth.* *Wild Onion.*

Bulb oblong-ovoid; leaves linear, acutely carinate; scape elongated, angular; umbel nodding, many-flowered, loose; leaflets of the perianth oblong-ovate, acute, about half the length of the stamens; filaments simple; ovary 6-toothed at the summit; cells of the capsule 1 – 2 seeded. — "*Roth. cat. fasc.* 2. *t.* 2," (ex *Pursh*); *Bot. mag. t.* 1324; *Pursh, fl.* 2. *p.* 732; *Ell. sk.* 1. *p.* 385; *Torr. fl.* 1. *p.* 341; *Hook. fl. Bor.-Am.* 2. *p.* 184; *Kunth, enum.* 4. *p.* 435. A. tricorne, *Poir. enc. suppl.* 1. *p.* 270.

Bulb ovoid, about an inch long. Leaves shorter than the stem, narrowly linear, obtuse. Scape 1 – 2 feet high, marked with several prominent lines which give it an angular appearance, more or less curved or nodding very near the summit. Spathe 2-leaved, very short. Umbel about 20-flowered; the pedicels nearly an inch long. Perianth rose-color; the segments about 3 lines long. Stamens somewhat unequal: filaments slender, much exserted, scarcely dilated at the summit: anthers oval. Ovary roundish; each cell furnished with 2 conspicuous teeth at the summit: style slender: stigma minute. Capsule roundish, 3-lobed; each lobe crowned with a pair of obtuse teeth or short horns. Seeds large, black.

Chemung valley (*Dr. Knieskern*). *Fl.* July – August.

5. ASPARAGUS. *Linn.; Endl. gen.* 1164. *ASPARAGUS.*

[Said to be from the Greek, *asparagos*, a young shoot or turion.]

Perianth 6-parted, somewhat campanulate; the segments spreading at the apex. Stamens 6: anthers peltate. Ovary 3-celled, with 2 amphitropous ovules in each cell: style short: stigma 3-lobed. Berry 3-celled, the cells 2-seeded.— Perennial herbs, or sometimes undershrubs, branching; the branches often spiny. Leaves narrow, fasciculate. Flowers small, mostly axillary and solitary; the pedicels articulated in the middle.

5. ASPARAGUS OFFICINALIS, *Linn.* *Common Asparagus.*

Unarmed; stem herbaceous, erect, much branched; leaves setaceous, flexible.— *Linn. sp.* 1. *p.* 313; *Engl. bot. t.* 339; *Pursh, fl.* 1. *p.* 235; *Torr. fl.* 1. *p.* 357; *Beck, bot. p.* 363; *Darlingt. fl. Cest. p.* 218.

Root creeping. Stem 2 – 5 feet high, very smooth; leaves in numerous small fascicles. Flowers axillary or in pairs, drooping, greenish yellow, deeply 6-parted; the segments lanceolate. Berry globose, red when mature. Seeds black.

Gravelly and rocky shores, within the reach of salt water: not uncommon in the vicinity of New-York and on Long Island: thoroughly naturalized in some places: originally from Europe. *Fl.* June – July. *Fr.* September.

6? ALETRIS. *Linn.; Endl. gen.* 1259. *STAR-GRASS.*

[From the Greek, *alciar*, meal; because of the mealy appearance of the flowers.]

Perianth tubular or tubular-campanulate, rugose, 6-cleft, persistent; the tube cohering with the ovary at the base. Stamens 6, included: filaments short, inserted at the base of the segments of the perianth: anthers sagittate, introrse. Ovary ovoid, 3-celled: ovules numerous, anatropous, arranged in a double series and somewhat ascending. Style formed of the tapering summit of the ovary, triangular, 3-lobed at the summit, and finally separable into 3 parts: stigmas minute. Capsule invested with the rough persistent perianth, ovoid-triangular, coriaceous; the 3 carpels separating at the summit loculicidally, each with a portion of the style. Seeds obovoid-oblong, slightly curved, striate. Embryo minute, roundish, next the hilum, in fleshy and oily albumen.— Perennial herbs, with a thick abrupt rhizoma. Leaves all radical, in a spreading cluster, linear-lanceolate, entire. Scape elongated, simple. Flowers in a terminal spike-like raceme.

1. ALETRIS FARINOSA, *Linn.* *Star-grass. Colic-root.*

Flowers distinctly pedicellate, oblong-tubular. — *Linn. sp.* (ed. 2.) 1. *p.* 456; *Bot. mag.*

t. 1418; *Bigel. med. bot.* 3. *p.* 94. *t.* 50, and *fl. Bost. p.* 131; *Ell. sk.* 1. *p.* 398; *Torr. fl.* 1. *p.* 344; *Beck, bot. p.* 364; *Darlingt. fl. Cest. p.* 219. A. alba, *Michx. fl.* 1. *p.* 189; *Pursh, fl.* 1. *p.* 225.

Rhizoma tuberous, throwing down numerous tough fibres. Leaves smooth, 3 – 6 inches long, lanceolate and linear-lanceolate, pale yellowish green and of a dry texture. Scape 2 – 3 feet high, slender, terete, smooth, sparingly furnished with small narrow bract-like leaves. Racemes 6 – 12 inches long (still more elongated in fruit), erect. Pedicels about a line in length, with one or two subulate bracts at the base. Perianth about one-third of a line long, rugose-muricate, and appearing as if covered with a rough powder externally; the tube white: segments oblong, yellowish at the summit, the alternate ones a little narrower and thickened at the tip. Stamens equal: filaments short, subulate, attached to the middle of the back of the anthers. Ovary roundish, nearly all the lower half adhering to the perianth. Style about as long as the stamens. Capsule nearly one-fourth of an inch long, opening loculicidally about one-third of its length, a portion of the style remaining attached to each lobe. Seeds numerous, minute, reddish, striate or ribbed.

Dry woods and thickets, sometimes in dry swamps: not uncommon in the southern part of the State and on Long Island, but rare in the interior. *Fl.* July. *Fr.* September. The root or rhizoma is very bitter, and is employed as a domestic remedy for intermittents and colic. This genus has generally been referred to ASPHODELEÆ, but it differs in several important points; nor does it agree better with any other division of the great order of LILIACEÆ. Endlicher places it among HÆMODORACEÆ, to which it has some affinity, but can hardly belong to that tribe. In its tripartite style, and in some other characters, it makes a near approach to MELANTHACEÆ.

ORDER CXVIII. PONTEDERIACEÆ. *Kunth.* THE PICKEREL-WEED TRIBE.

Flowers perfect. Perianth colored, funnel-form or salver-form; the limb 6-cleft or 6-parted, more or less irregular, often 2-lipped: æstivation convolute. Stamens 3 – 6, usually unequal, inserted into the tube of the perianth. Ovary free, or sometimes partly adherent to the tube of the perianth, more or less completely 3-celled, two of the cells (in PONTEDERIA) sometimes smaller and empty. Ovules anatropous in a double series, ascending or inverted; in PONTEDERIA, the fertile cell with a solitary suspended ovule: sytle single: stigma 3 – 6-cleft or -toothed. Fruit covered with the persistent tube of the perianth, 3- or 1-celled, loculicidal, many-seeded, sometimes utricular, 1-seeded and indehiscent. Seeds usually ribbed, with a thin testa. Embryo cylindrical,

in the axis of dense mealy albumen. — Marsh or water plants, with a creeping rhizoma. Leaves sheathing at the base, usually on long petioles, rarely linear and sessile. Flowers in spikes or racemes, sometimes axillary and solitary.

1. PONTEDERIA. *Linn.; Kunth, enum.* 4. *p.* 123. *PICKEREL-WEED.*

[In honor of JULIUS PONTEDERA, Professor of Botany at Padua.]

UNISEMA, *Raf.*

Perianth funnel-form; the tube curved, with 3 slits on the inner curve: limb 6-cleft, 2-lipped. Stamens 6; the 3 lower opposite the 3 segments of the lower lip, and somewhat exserted; the 3 upper much shorter, inserted lower down opposite the segments of the upper lip: anthers oblong. Ovary 3-celled; 2 of the cells empty; the fertile cell with a single suspended ovule. Stigma of 6 small erect acute lobes. Utricle one-seeded. — Marsh plants, with flowering stems springing from a perpendicular rhizoma. Radical leaves on long petioles, mostly cordate. Flowers in dense spikes, blue.

1. PONTEDERIA CORDATA, *Linn.* (Plate CXXXI.) *Common Pickerel-weed.*

Leaves oblong-cordate; spike cylindrical, dense. — *Linn. sp.* 1. *p.* 288; *Mich. fl.* 1. *p.* 194; *Bot. mag. t.* 1156; *Red. Lil. t.* 72; *Pursh, fl.* 1. *p.* 223; *Ell. sk.* 1. *p.* 382; *Rasp. ann. du mus.* 14. *t.* 9. *f.* 1 – 6; *Mirb. l. c.* 16. *t.* 16; *Bigel. fl. Bost. p.* 130; *Torr. fl.* 1. *p.* 342; *Beck, bot. p.* 368; *Darlingt. fl. Cest. p.* 215; *Kunth, enum.* 4. *p.* 124.

var. *angustifolia*: leaves elongated-triangular, truncate and somewhat cordate at the base. *Torr. l. c.* P. angustifolia, *Pursh, l. c.; Nutt. l. c.; Beck, l. c.; Kunth, l. c.* P. cordata β., *Red. l. c.* P. mucronata, *Raf. in N. York med. rep.* 11. *p.* 352.

Stem erect, stout, cylindrical, bearing a single leaf. Leaves 4 – 6 inches long and 2 – 3 inches wide (in the *var.* much narrower), usually obtuse, sagittate-cordate at the base, very smooth, and somewhat fleshy: petiole 3 – 6 inches long, the lower part dilated and sheathing. Spathe (or rather naked sheath of the upper leaf) surrounding the peduncle. Spike 2 – 3 inches long. Flowers crowded, somewhat fasciculate, glandularly pubescent. Perianth bright blue; the tube with 3 longitudinal gashes on the lower side: upper lip flat, 3-cleft: segments oblong; the middle one broader, and usually marked with a yellow spot: lower lip deeply divided into 3 linear-oblong segments. Stamens 6: filaments slender: anthers blue. Ovary oblong, tapering into a slender style, which is shorter than the longer stamens: stigma minute, 6-toothed. Fruit an utricle, enclosed in the persistent tube of the perianth, which is at length thick, and furnished with 6 crested ridges. Seed smooth, oblong, acute. Embryo cylindrical, in the axis of farinaceous albumen.

Borders of ponds and rivers: common. *Fl.* July – August. *Fr.* September. The *var.* angustifolia in Peach Pond, North Salem, Westchester county (*Dr. Mead*). Mountain lakes, *Pursh, Nuttall.*

2. HETERANTHERA. *Ruiz & Pav. fl. Peruv.* 1. *p.* 43. *HETERANTHERA.*

[From the Greek, *heteros*, different, and *aner*, anther.]

Perianth salver-form; the segments nearly equal, spreading. Stamens 3, equal or unequal. Ovary cylindrical-fusiform, 3-celled, but the dissepiments scarcely cohering in the axis: stigma capitate, 3-lobed. Ovules very numerous, in a double series in each cell, ascending. Capsule surrounded by the withered perianth-tube, incompletely 3-celled, loculicidal. Seeds ovoid.—Herbs, growing in miry places, or floating, with creeping stems, and reniform-ovate or -cordate leaves on long petioles, sometimes linear. Spathe 1 – 15-flowered; the flowers small, white, blue or yellow.

* HETERANDRA, Beauv. *Stamens unequal: two of them with somewhat thickened filaments and small ovate anthers; the other with a dilated filament and large sagittate anther. Stigma capitate, obscurely 3-lobed. Spathe 2 – 15-flowered; the flowers white or blue. Leaves ovate or cordate.*

1. HETERANTHERA RENIFORMIS, *Ruiz & Pav.* (Pl. CXXXII.) *Mud Plantain.*

Leaves cordate-reniform; spikes 3 – 5-flowered. — *Ruiz & Pav. l. c. t.* 71; *Torr. fl.* 1. *p.* 41; *Beck, bot. p.* 369; *Darlingt. fl. Cest p.* 14; *Kunth, enum.* 4. *p.* 123. H. acuta, *Willd. in nov. act. soc. amic. hist. nat.* 3. *p.* 438; *Pursh, fl.* 1. *p.* 32. Heterandra reniformis, *P. de Beauv. in Am. phil. trans.* 4. *p.* 173. Leptanthus reniformis, *Michx. fl.* 1. *p.* 24. L. Peruviana & Virginica, *Pers. syn.* 1. *p.* 56.

Stem creeping and rooting in the mud or partly floating, branching, 6 – 12 inches long. Leaves about $\frac{3}{4}$ths of an inch wide; the petioles 2 – 3 inches long. Spathe oblong, acuminate and cuspidate, enclosing a spike of from 3 to 5 flowers, which unfold and protrude successively, and are very fugacious. Perianth white, about one-fourth of an inch in diameter when expanded; the segments oblong, acute: tube nearly twice the length of the segments. Stamens much shorter than the perianth: two of them with small ovate anthers; the other taller, with a large anther which usually embraces the style. Style longer than the stamens; the stigma capitate and slightly 3-lobed. Ovary acuminate, surrounded by the tube of the perianth, but not adhering to it: ovules very numerous. Capsule oblong, membranaceous. Seeds oblong.

Muddy banks of rivers: rare on the Hudson, above Fishkill Landing. *Fl.* July – September. *Fr.* September – October.

** SCHOLLERA, Willd. *Stamens nearly equal: filaments lanceolate-subulate: anthers similar, oblong-sagittate. Stigma 3-lobed: style clavate above. — Herb submerged. Leaves sessile, linear. Flowers axillary, solitary, yellow.*

2. HETERANTHERA GRAMINEA, *Vahl.* (Pl. CXXXIII.) *Water Star-grass.*

Stem submerged; leaves linear, flat, sessile, rather acute; spathe axillary, sessile, one-flowered.—*Vahl, enum.* 2. *p.* 45; *Pursh. fl.* 1. *p.* 32; *Kunth, enum.* 4. *p.* 122. Leptanthus gramineus, *Michx. fl.* 1. *p.* 25. *t.* 5. *f.* 2; *Nutt. gen.* 1. *p.* 29; *Hook. exot. fl. t.* 94. Schollera graminifolia, *Willd. l. c.; Muhl. cat. p.* 5; *Torr. fl.* 1. *p.* 41. S. graminea, *Bart. fl. N. Am.* 2. *t.* 54; *Beck, bot. p.* 369; *Darlingt. fl. Cest. p.* 14.

Stem much branched, varying in length with the depth of the water, rooting at the lower joints. Leaves 2 – 8 inches or more in length, and 1 – 3 lines wide. Spathe about an inch long, acuminate. Perianth with a very long slender tube, which is somewhat curved : segments of the border equal, lanceolate-linear, pale yellow. Stamens more than half the length of the perianth, usually 3 but sometimes 4, a little unequal : filaments somewhat dilated : anthers yellow, narrowly oblong, sagittate at the base. Ovary incompletely 3-celled, conical-lanceolate, tapering into a long slender style, which, above the tube of the flower, is thickened and somewhat clavate : stigma small, consisting of 3 hairy spreading lobes. Ovules numerous, erect.

Flowing waters : frequent. *Fl.* July – August. *Fr.* September. This species differs so much from the preceding in character and habit, that I should have adopted the genus SCHOLLERA of Willdenow, were it not that *Het. zosterifolia* of Martius connects it with the present genus.

ORDER CXIX. MELANTHACEÆ. *R. Brown.* THE COLCHICUM TRIBE.

Flowers often polygamous or diœcious. Perianth more or less colored, 6-leaved or deeply 6-parted, regular, mostly persistent; the æstivation often involute. Stamens 6 (in PLEEA 9 – 12): anthers extrorse, or very rarely introrse. Ovaries 3, more or less united : styles distinct, stigmatose on the inside, or with a simple stigma at the summit. Ovules in a double series, ascending, anatropous. Capsule membranaceous or coriaceous, more or less completely separable into 3 carpels, and dehiscing at the ventral suture, sometimes loculicidal. Seeds 5 – 20 (rarely 2) in each carpel, angular or compressed : testa membranaceous, often winged or margined. Embryo small, in fleshy albumen; the radicle next the hilum.— Perennial herbs, with simple stems or scapes arising from corms, bulbs, or a horizontal rhizoma. Leaves sessile, linear or dilated, more or less clasping or sheathing at the base. Flowers mostly in racemes, panicles or spikes, sometimes solitary or fasciculate.

CONSPECTUS OF THE GENERA.

1. *Anthers spuriously one-celled, shield-form after dehiscence.*

* Leaflets of the perianth bearing 2 glands, which are sometimes connate.

1. ZYGADENUS. Flowers perfect. Leaflets of the perianth without claws. Filaments free.
2. MELANTHIUM. Flowers mostly polygamous. Filaments inserted on the claws of the perianth.

** Leaflets of the perianth without glands or claws.

3. VERATRUM. Flowers polygamous, in compound racemes. Stamens shorter than the perianth.

2. *Anthers 2-celled.*

4. HELONIAS, § CHAMÆLIRIUM. Flowers diœcious. Filaments not dilated. Capsule ovoid, many-seeded.

1. ZYGADENUS. *Mich. fl.* 1. *p.* 213; *Gray, Melanth. Amer. sept. in ann. lyc. N. York,* 4. *p.* 111. ZYGADENUS.

[From the Greek, *zygos*, a yoke, and *aden*, a gland; the glands of the perianth being in pairs.]

ANTICLEA, *Kunth.*

Flowers perfect (or rarely polygamous). Leaflets of the perianth united at the base, spreading, without claws; the lower part of each furnished with two (sometimes connate) glands. Stamens 6; the filaments dilated at the base, and inserted with the leaflets of the perianth, which they equal in length: anthers cordate, with the cells confluent at the apex, shield-form after dehiscence. Styles 3, slender: stigmas simple and somewhat capitate. Capsule ovoid-conical, 3-lobed; the carpels finally separating at the summit, and opening on the inside: cells 6 – 10-seeded. Seeds oblong, narrowly winged on one side, and sometimes with a membranaceous appendage at the summit.—Stems bulbous at the base, or springing from a creeping rhizoma, leafy. Leaves linear. Inflorescence paniculate: flowers white or greenish.

1. ZYGADENUS GLAUCUS, *Nutt.* *Glaucous-leaved Zygadenus.*

Bulb tunicated; leaves shorter than the stem; bracts lanceolate, shorter than the pedicels; leaflets of the perianth oval or obovate, obtuse; glands single, obcordate.—*Nutt. in jour. acad. Phil.* 7. *p.* 56; *Gray, l. c. p.* 113. Z. commutatus, *Rœm. & Schult. syst.* 7. *p.* 1559. Z. chloranthus, *Richards. app. Frankl. nar.* (ed. 2.) *p.* 12; *Torr. in ann. lyc. N. Y.* 2. *p.* 251; *Hook. fl. Bor.-Am.* 2 *p.* 177. Melanthium glaucum, *Nutt. gen.* 1. *p.* 232; *Torr. fl.* 1. *p.* 367; *Beck, bot. p.* 366. Anticlea glauca, *Kunth, enum.* 4. *p.* 192.

Stem 1 – 2 feet high, naked above, slender. Leaves mostly radical, finely nerved, 2 – 4 lines wide, rather obtuse, very smooth. Panicle with few erect branches, or reduced to almost a simple raceme. Pedicels from half an inch to an inch in length. Flowers nearly three-fourths of an inch in diameter, sometimes polygamous. Perianth greenish, turbinate and adherent to the ovary at the base; each leaflet with a conspicuous adnate gland. Stamens about the length of the perianth: filaments slender: anthers somewhat reniform. Ovary oblong: styles finally recurved, stigmatose at the extremity. Capsule membranaceous. Seeds (immature) compressed, 7 – 10 in each cell, winged on one side, and with an appendage at the summit; the chalaza very conspicuous.

Gravelly banks of the St. Lawrence, in calcareous soil; also about the Falls of Niagara, and on Lake Erie (*Nuttall*). A widely diffused species, but rare in this State.

2. MELANTHIUM. *Linn. gen. no.* 454; *Mich. fl.* 2. *p.* 250. *MELANTHIUM.*

[From the Greek, *melas*, black, and *anthos*, a flower; the flowers turning dark in decay.]

LEIMANTHIUM, *Willd.*; ZYGADENUS (chiefly), *Kunth.*

Flowers mostly polygamous. Leaflets of the perianth rotate, petaloid, each with 2 glands; the claws bearing the stamens. Stamens 6, shorter than the perianth: anthers reniform; the cells confluent at the apex, shield-form after dehiscence. Styles short, subulate: stigmas simple, minute. Capsule ovoid-conical, membranaceous, 3-lobed; the carpels distinct at the summit and finally separable their whole length, opening on the inside, 4 – 10-seeded. Seeds compressed, with a broad membranaceous wing. — Stem usually tall and puberulent. Leaves linear or lanceolate. Flowers in a pyramidal panicle, ochroleucous or dull yellowish green.

The genus MELANTHIUM was founded on *M. Virginicum*; the name must therefore be retained for that species, and the nearly allied *M. hybridum*, as has been suggested by Dr. Gray in *Sill. jour.* 42. *p.* 27.

1. MELANTHIUM VIRGINICUM, *Linn.* (Pl. CXXXIV.) *Virginian Melanthium.*

Leaflets of the perianth ovate, auriculate-cordate at the base; glands approximated, the claws bearing the stamens above the middle. — *Linn. sp.* 1. *p.* 339; *Michx. fl.* 2. *p.* 251; *Pursh, fl.* 1. *p.* 240; *Ell. sk.* 1. *p.* 418; *Torr. fl.* 1. *p.* 267; *Beck, bot. p.* 366; *Darlingt. fl. Cest. p.* 231. Helonias Virginica, *Sims in bot. mag. t.* 285. Leimanthium Virginicum, *Willd. in mag naturf. fr.* 2. *p.* 24, ex *Schult. syst.* 7. *p.* 1549; *Gray, l. c. p.* 115. Zygadenus Virginicus, *Kunth, enum.* 4 *p.* 195.

Stem 3 – 4 feet high, leafy, minutely pubescent. Leaves 8 – 15 inches long and $\frac{1}{2}$ – 1 inch wide, pale green, narrowed and clasping at the base. Panicle a foot or more in length; the branches few, simple and racemose: perfect and sterile flowers mixed. Pedicels 6 – 8 lines long, with ovate bracts at the base. Perianth about half an inch in diameter, dull greenish yellow, finally becoming brown; the leaflets stellately spreading, at first broadly ovate, but at length narrower, somewhat hastate at the base, abruptly narrowed into a distinct claw; the glands oval, approximated but not united. Filaments cohering with the claws of the perianth above the middle. Ovary in the sterile flower only rudimentary, but the styles distinct. Capsule about half an inch long, consisting of 3 united follicular carpels, which are distinct at the summit. Seeds much compressed, 4 – 10 in each carpel, with a broad winged margin.

Wet meadows, Staten Island. Orange county (*Dr. Horton*). *Fl.* July. *Fr.* September. I suspect that the Orange county plant is *M. hybridum*, as that species is frequent in the neighboring county of Sussex in New-Jersey. I have not seen Dr. Horton's specimens.

3. VERATRUM. *Linn.; Gray in ann. lyc. N. York, 4. p. 117.* *VERATRUM.*

[From the Latin, *vere atrum*, truly black; in allusion to the color of the root.]

Flowers polygamous. Leaflets of the perianth more or less united at the base, spreading or somewhat erect, without claws or glands. Anthers reniform-globose; the cells confluent at the apex, shield-form after flowering. Styles short, subulate. Capsule ovoid, membranaceous, 3-lobed; the carpels distinct at the summit. Seeds 8 – 20 in each cell, with a broad membranaceous wing.

Subgenus VERATRUM *proper*, Gray. *Leaflets of the perianth oborate or oblong, scarcely acute, more or less narrowed at the base, twice the length of the stamens.—Stems robust, leafy: leaves ovate or oblong, plicate, sheathing the stem at the base: panicle pyramidal, the branches mostly simple and racemose: flowers yellowish green or dark purple.*—Gray.

1. VERATRUM VIRIDE, *Ait.* *White Hellebore. Indian Poke.*

Branches of the panicle finally spreading; perianth spreading-campanulate; the leaflets oblong, somewhat narrowed at the base, about one-third longer than the stamens.—*Ait. Kew.* (ed. 1.) 3. *p.* 896; *Pursh, fl.* 1. *p.* 242; *Bigel. med bot. t.* 33, *and fl. Bost. p.* 374; *Ell. sk.* 1. *p.* 419; *Nutt. gen.* 1. *p.* 233; *Torr. fl.* 1. *p.* 368; *Beck, bot. p.* 368; *Darlingt. fl. Cest. p.* 232; *Gray, l c. p.* 118; *Hook. fl. Bor.-Am.* 2. *p.* 178; *Kunth, enum.* 4. *p.* 188. V. album, *Michx. fl.* 1. *p.* 249, not of *Linn.* Helonias viridis, *Bot. mag. t.* 1096 (excl. syn.).

Root thick and fleshy; the lower part giving off numerous whitish fleshy fibres. Stem 2 – 4 feet high, very leafy, stout, pubescent. Leaves 6 – 10 inches long and 3 – 5 inches wide, pubescent, strongly plaited and nerved, acuminate, clasping; the upper ones gradually diminishing in size till they become lanceolate bracts. Panicle 8 – 12 inches long; the branches simple or somewhat compound. Pedicels about 3 lines long. Flowers yellowish green. Leaflets of the perianth denticulate on the thickened margin. Stamens rather longer in the perfect than in the abortive flowers; the filaments recurved. Styles about 2 lines long, recurved. Capsule nearly an inch long, consisting of 3 follicular carpels united on the inner side, and finally separating about half way down. Seeds 10 – 18 in each carpel, oblong (including the broad wing), pale, acute at the apex; the nucleus linear-oblong. Embryo oval, in fleshy albumen.

Swamps: common. *Fl.* May. *Fr.* July. This plant is nearly allied to the *V. album* of Europe, and possesses similar active qualities. It is popular throughout the country as an external remedy for cutaneous affections; but it is dangerous when swallowed, even in small quantities. Like many other plants of this natural order, it contains the very poisonous principle called *veratrine*.

4. HELONIAS. *Linn.* (in part); *Gray in ann. lyc. N. York*, 4. *p.* 130. *HELONIAS.*

[Said to be derived from *helos*, the Greek for marsh; some of the species growing in wet grounds.]

Flowers perfect (sometimes polygamous or diœcious). Leaflets of the perianth narrow, without claws or glands, spreading. Stamens 6, hypogynous, and finally exceeding the perianth. Anthers roundish, 2-celled, forked at the base. Styles 3, spreading, flat and stigmatose on the inside the whole length. Capsule obcordate or ovoid; the cells many-seeded. Seeds winged at each end. — Smooth perennial herbs. Pedicels without bracts.

Subgenus CHAMÆLIRIUM, Willd. *Flowers diœcious. Capsule ovoid, septicidal; the cells 5 – 9-seeded. — Root præmorse: stem slender: flowers white, in a long (finally virgate) spike-like raceme.*

1. HELONIAS (CHAMÆLIRIUM) DIOICA, *Pursh.* *Devil's-bit. Unicorn-plant.*

Stem leafy; sterile raceme nodding at first; the fertile mostly erect.—*Pursh, fl.* 1. *p.* 243; *Ell. sk.* 1. *p.* 423; *Torr. fl.* 1. *p.* 370; *Bigel. fl. Bost. p.* 141; *Beck, bot. p.* 367; *Darlingt. fl. Cest. p.* 233; *Gray, l. c. p.* 132; *Hook. fl. Bor.-Am.* 2. *p.* 178. H. pumila, *Jacq. ic. rar.* 2. *t.* 253. H. lutea, *Ait. Kew.* (ed. 2.) 2. *p.* 330; *Bot. mag. t.* 1062. Veratrum luteum, *Linn. sp.* 2 *p.* 1044, *et amœn. acad.* 3. *t.* 1. *f.* 2. Chamælirium Carolinianum, *Willd. in mag. naturf.* 2. *p.* 23; *Kunth, enum.* 4. *p.* 176. Ophiostachys Virginica, *Delile in Red. Lil. t.* 464.

Root thick and bitter. Sterile plant 1 – 2 feet high; the fertile often three feet or more. Radical leaves in a tuft 4 – 8 inches long and half an inch to an inch broad, tapering to a long narrow base: stem-leaves much smaller, and linear-lanceolate. Sterile raceme usually nodding or recurved, 3 – 8 inches long; the pedicels spreading, 1 – 2 lines long: fertile raceme longer, and commonly erect; the pedicels erect, 2 – 3 lines long. Flowers white. Leaflets of the perianth narrowly linear-spatulate. Stamens unequal, white, longer than the perianth in the sterile flowers, short and imperfect in the fertile. Ovary green, usually entirely wanting in the staminate flowers. Styles somewhat clavate, nearly the length of the ovary. Capsule oblong-ovoid or obovoid, 3-lobed, 3-partible at the summit; the carpels opening on the inside. Seeds 6 – 10 in each cell, with a winged margin which is broadest at each end.

Meadows, and moist woods. *Fl.* May – June. *Fr.* September. Dr. Darlington states that he has found perfect flowers on the staminate racemes, and sometimes the ovary composed of 4 carpels. The root is a popular tonic and anthelmintic.

SUBORDER UVULARIÆ. *A. Gray; Kunth.*

Flowers perfect. Perianth deciduous, 6-leaved; the æstivation imbricate. Stamens inserted at the base of the leaflets of the perianth: anthers extrorse (the back turned inward). Ovary 3-celled, with 2 or many anatropous ovules in each cell: style single: stigma entire, 3-lobed or 3-cleft. Fruit capsular and loculicidal, or baccate. Seeds solitary or several in each cell; the testa thin: raphe filiform or very tumid. Albumen mostly fleshy, sometimes cartilaginous. — Perennial herbs, with leafy forked stems. Leaves sessile, and often clasping or perfoliate. Peduncles terminal, axillary or extra-axillary, solitary, 1 – 2 – several-flowered; the flowers nodding.

CONSPECTUS OF THE GENERA.

5. UVULARIA. Anthers linear, elongated. Ovary 3-celled, with 4 – 6 ovules in each cell: stigma 3-cleft. Capsule 3-celled; the cells 2 – 6-seeded. Seeds smooth, with a tumid raphe.

6. PROSARTES. Anthers linear-oblong. Ovary 2-celled, with 2 suspended ovules in each cell: style 3-cleft. Berry globose-elliptical, 1 – 2-seeded.

7. STREPTOPUS. Anthers subulate or 2-cleft at the summit. Ovary 3-celled, with 7 – 15 ovules in each cell: stigma nearly entire or 3-cleft. Berry 3-celled, many-seeded.

5. UVULARIA. *Linn.; Endl. gen.* 1080; *Kunth, enum.* 4. *p.* 200. *BELL-WORT.*

[From the Latin, diminutive of *uva*, a cluster, or *uvula*, the appendage to the palate; but the application is not very evident.]

Perianth deeply 6-parted, somewhat campanulate; segments with a nectariferous cleft at the base. Stamens 6: filaments very short: anthers linear, erect, adnate and extrorse. Ovary 3-celled, with several anatropous ovules in a double series in each cell: style single, 3-cleft: stigmas 3, recurved. Capsule triangular, 3-celled, loculicidal. Seeds few, nearly globose, with a large tumid raphe. Embryo minute, next the hilum: albumen fleshy. — Perennial herbs, with alternate, entire, clasping or sometimes perfoliate leaves. Flowers solitary, on axillary peduncles, nodding.

1. UVULARIA PERFOLIATA, *Linn.* *Perfoliate Bellwort.*

Leaves perfoliate, elliptical, mostly acute; perianth tuberculate-rough within; anthers cuspidate; capsule truncate. — *Linn. sp.* 1. *p.* 304; *J. E. Smith, exot. bot.* 1. *p.* 95. *t.* 49; *Bot. mag. t.* 995; *Pursh, fl.* 1. *p.* 231; *Bigel. fl. Bost. p.* 81; *Ell. sk.* 1. *p.* 390; *Bart. fl. N. Am.* 1. *t.* 32; *Torr. fl.* 1. *p.* 351; *Beck, bot. p.* 361; *Darlingt. fl. Cest. p.* 222; *Hook. fl. Bor.-Am.* 2. *p.* 174; *Kunth, enum.* 4. *p.* 200. U. perfoliata, *var.* minor, *Michx. fl.* 1. *p.* 199.

Root a tuft of fleshy fibres. Stem erect, 8 – 10 inches high, sheathed toward the base, forked above, smooth. Leaves about two inches long, perfoliate near the base. Flowers mostly pendulous and solitary, from one of the forks of the stem, about three-fourths of an

inch long, pale yellow, roughened on the inside with little granular tubercles. Filaments inserted at the base of the corolla : anthers long and linear, with an abrupt acumination. Ovary obovoid-triangular, obtuse : style slender, triangular : stigmas filiform, reflexed. Capsule with 3 concave sides, and as many projecting deeply grooved angles. Seeds several in each cell, nearly globose, at first half surrounded by the large tumid raphe, but which is finally retracted on each side.

Moist woods and shady thickets. *Fl.* May. *Fr.* September.

2. UVULARIA GRANDIFLORA, *Smith.* *Large-flowered Bellwort.*

Leaves perfoliate, elliptical or ovate-elliptical, acute ; perianth smooth within ; anthers obtuse ; capsule truncate. — *J. E. Smith, exot. fl. p.* 99 *t.* 51 ; *Bot. mag. t* 1212 ; *Pursh, fl.* 1. *p.* 391 ; *Ell. sk.* 1. *p.* 391 ? ; *Bigel. fl. Bost. p.* 134 ; *Torr. fl.* 1. *p.* 351 ; *Beck, bot. p.* 362 ; *Hook. fl. Bor. Am.* 2. *p.* 175 ; *Kunth, enum.* 4. *p.* 201. U. perfoliata, *var.* major, *Michx. fl.* 1. *p.* 199. U. lanceolata, *Willd. sp.* 2. *p.* 94 ?

Roots consisting of numerous fasciculate thick fibres. Stem 12 – 15 inches high, sheathed below, once or twice forked above ; one of the principal forks with a single or sometimes two flowers, the other with a single flower or none. Leaves 2 – 3½ inches long and 1 – 2 inches wide, acute or slightly acuminate. Flowers twice as large as in the preceding species, and of a brighter yellow. Segments of the perianth narrowly lanceolate, contracted at the base. Stamens about half the length of the perianth : filaments very short, dilated in the middle : anthers 6 – 8 lines long, the connective produced into a slight blunt point. Style cleft to the middle ; the segments slender : stigmas linear, recurved. Ovary obovate-triangular. Capsule (immature) triangular ; the angles not so projecting as in *U. perfoliata*. Young seeds almost surrounded by the membranaceous appendage of the raphe, or perhaps arillus.

Fertile woods and hill-sides : frequent in the western and northern parts of the State. Troy (*Eaton*). *Fl.* May – June.

3. UVULARIA SESSILIFOLIA, *Linn.* *Sessile-leaved Bellwort.*

Leaves ovate-lanceolate, somewhat glaucous underneath ; segments of the perianth smooth inside ; anthers obtuse ; capsule acute at each end, stipitate. — *Linn. sp.* 1. *p.* 305 ; *Michx. fl.* 1. *p.* 199 ; *J. E. Smith, exot. bot. p.* 101. *t.* 52 ; *Bot. mag. t.* 1402 ; *Pursh, fl.* 1. *p.* 233 ; *Ell. sk.* 1. *p.* 292 ; *Bart. fl. N. Am.* 2. *t.* 54. *f.* 1 ; *Bigel. fl. Bost. p.* 135 ; *Torr. fl.* 1. *p.* 352 ; *Beck, bot. p.* 362 ; *Darlingt. fl. Cest. p.* 223 ; *Hook. fl. Bor.-Am.* 2. *p.* 175 ; *Kunth, enum.* 4. *p.* 201.

Stem 8 – 12 inches high, sheathed below, mostly 2-forked above, with a single pendulous flower on one of the forks. Leaves 1 – 2 inches long, acute, smooth. Flower pale yellow or cream-colored, about three-fourths of an inch long. Stamens about two-thirds the length of the perianth : filaments narrowly linear, half the length of the anthers. Style 3-cleft one-third of its length : stigmas linear and revolute. Capsule triangular-obovoid, tapering at the base.

Woods : frequent. *Fl.* May. *Fr.* August.

6. PROSARTES. *D. Don in Linn. trans.* 18. *p.* 531. *PROSARTES.*

[From the Greek, *prosartao*, to hang upon; in allusion to the suspended ovules.]

Species of STREPTOPUS, *auct.*

Perianth 6-leaved, campanulate-spreading, deciduous; the leaflets with a nectariferous pit, or saccate at the base. Stamens 6; the filaments inserted at the base of the perianth: anthers adnate; the cells opening along the outer edge. Ovary 3-celled, with 2 anatropous ovules suspended from the summit of each cell. style single: stigmas 3, short, recurved. Berry ovoid, 3-celled. Seeds 1 or rarely 2 in each cell, oblong, without a strophiole: radicle next the hilum. — Perennial pubescent herbs, with the stems dichotomously branched above. Leaves alternate, sessile. Flowers terminal; the pedicels solitary, in pairs, or umbellate.

1. PROSARTES LANUGINOSA, *D. Don.* *Pale-flowered Prosartes.*

Leaves ovate-oblong, acuminate, clasping, ciliolate, minutely pubescent underneath; pedicels in pairs; leaflets of the perianth linear-lanceolate; style smooth. — *D. Don, l. c. p.* 532; *Kunth, enum.* 4. *p.* 203. Streptopus lanuginosus, *Michx. fl.* 1. *p.* 201; *Pursh, fl.* 1. *p.* 132; *Nutt. gen.* 1. *p.* 224; *Ell. sk.* 1. *p.* 393; *Torr. fl.* 1. *p.* 353; *Beck, bot. p.* 360. Uvularia lanuginosa, *Pers. syn.* 1. *p.* 360; *Bot. mag.* 1409; *Hook. fl. Bor.-Am.* 2. *p.* 174. U. puberula, *Richards. in app. Frankl. narr. p.* 10, not of *Michx.*

Root a tuft of thick fibres. Stem 12 – 18 inches high, clothed with sheaths below; the upper part unequally twice- or thrice-forked, sparsely clothed with slender crisped simple hairs. Leaves $1\frac{1}{2}$ – 3 inches long, thin, marked with 9 – 15 longitudinal nerves which are connected by cross veins; 3 – 5 of the nerves stronger than the others. Pedicels 6 – 8 lines long, often connected at the base, pubescent. Flowers about three-fourths of an inch in diameter, yellowish green (not spotted). Segments of the perianth a little dilated in the middle, and tapering to a long point, with a small nectariferous pit at the base, at first campanulate but finally spreading. Stamens half the length of the flower: filaments compressed, linear, smooth: anthers linear-oblong, obtuse. Ovary obovoid, tapering into a long slender style, triangular: stigmas recurved. Berry ovoid, red, obtusely triangular; the cells mostly one-seeded. Embryo minute, oblong, next the hilum.

Woods. Cattaraugus and Monroe counties (*Dr. Bradley*); Chautauque and Erie counties (*Dr. Knieskern*); near Buffalo (*Dr. Kinnicutt*); Auburn (*Mr. J. Carey*); near Rochester (*Dr. Harris*). *Fl.* May – June. *Fr.* August.

To this genus belongs *Streptopus maculatus* of Mr. Buckley* (*P. maculata*, Torr. & Gr.), a native of the Cumberland mountains, Tennessee.

* Silliman's Journal, 44. p. 170.

7. STREPTOPUS. *Michx. fl.* 1. *p.* 200; *Endl. gen.* 1180. *TWISTED-STALK.*

[From the Greek, *streptos*, twisted, and *pous*, foot; there being a peculiar twist in the pedicels.]

HEKORIMA, *Raf.*, *Kunth.*

Perianth 6-leaved, campanulate at the base; the leaves spreading or recurved, the 3 interior carinate. Stamens 6, inserted at the base of the segments: filaments very short: anthers sagittate, innate, extrorse. Ovary 3-celled, with many anatropous ovules in a double row in each cell: style single, tapering: stigma simple, obtuse. Berry 3-celled. Seeds numerous, imbricated, oblong, many-ribbed, without a strophiole. Embryo cylindrical, next the hilum. Albumen firm and fleshy.— Perennial herbs, with a horizontal creeping rhizoma. Stems forked. Leaves clasping. Peduncles axillary, 1 – 2-flowered, geniculate and contorted near the middle. Flowers nodding.

1. STREPTOPUS AMPLEXIFOLIUS, *DC.* *Smooth Twisted-stalk.*

Leaves oblong-ovate, glaucous underneath, the margin naked; pedicels elongated, distorted and geniculate above the middle; sepals reflexed; anthers with a long acumination, entire; stigma undivided, truncate.— *DC. fl. Fran.* 3. *p.* 174, *and in Red. Lil. t.* 259. S. distortus, *Michx. fl.* 1. *p.* 200; *Torr. fl.* 1. *p.* 353; *Bigel. fl. Bost. p.* 131; *Beck, bot. p.* 359; *Hook. fl. Bor.-Am.* 2. *p.* 173. *t.* 188. A.; *Kunth, enum.* 4. *p.* 205. S. amplexifolius, *var.* Americanus, *Schult. syst.* 7. *p.* 311; *Gray in ann. lyc. N. York*, 3. *p.* 232. Uvularia amplexifolia, *Linn. sp.* 304; *Pers. syn.* 1. *p.* 360.

Stem about two feet high, smooth, terete, once or twice forked. Leaves 2 – 4 inches long, acuminate, remarkably clasping so as to appear almost perfoliate, very smooth, many-nerved. Pedicels 1 – 2 inches long, distorted and furnished with a minute bract or callosity above the middle, and sometimes forked there; each division bearing a flower, and one of them distorted. Perianth greenish white; the segments linear-lanceolate, gibbous at the base. Filaments short: anthers sagittate, with a long tapering entire point. Ovary ovoid, sessile: style rather stout: stigma simple. Berry oblong, about half an inch in length, scarlet. Seeds about 12 in each cell, in a double row, obovoid-oblong, strongly ribbed.

Swamps and deep shady woods: rare. Fairfield, Herkimer county (*Dr. Hadley*); near Utica (*Dr. Gray*); Oriskany, and on Mount Marcy (*Dr. Knieskern*). *Fl.* June. *Fr.* August. The European plant seems to be identical with ours.

2. STREPTOPUS ROSEUS, *Michx.* *Rose Twisted-stalk.*

Leaves ovate-oblong, ciliate on the margin, green on both sides; pedicels less than twice the length of the flower, slightly geniculate near the middle; sepals spreading; anthers 2-cleft at the summit; stigma 3-cleft.—*Michx. fl.* 1. *p.* 201. *t.* 18; *Pursh, fl.* 1. *p.* 232; *Ell. sk.* 1. *p.* 392; *Nutt. gen.* 1. *p.* 224; *Bigel. fl. Bost. p.* 132; *Torr. fl.* 1. *p.* 352; *Beck, bot. p.* 359; *Hook. fl. Bor.-Am.* 2. *p.* 173. *t.* 188. B. Uvularia rosea, *Pers. syn.* 1. *p.* 360; *Bot. mag. t.* 1489. Hekorima dichotoma, *Raf. in N. Y. med. rep.* 5. *p.* 350; *Kunth, enum.* 4. *p.* 204.

Stem about 18 inches high, once or twice forked above, terete, very smooth. Leaves 2 – 3 inches long, thin and membranaceous, clasping, acuminate, the margin finely but distinctly ciliate with short cartilaginous hairs. Pedicels extra-axillary, one- (sometimes 2-, *Nutt.*) flowered, nodding, from one half to three fourths of an inch in length, smooth or pubescent, usually furnished near the middle with a short process or callosity. Flowers rather smaller than in the preceding species, purplish rose-color : segments lanceolate, acuminate. Stamens about half the length of the perianth : filaments short : anthers ovate-sagittate, terminating above in two subulate points ; the cells opening along the outer edge. Ovary obovoid, 3-celled, with several ovules in each cell : style rather slender : stigmas linear, short, somewhat spreading. Ripe fruit not seen.

Woods and swamps, particularly on mountains : frequent in the western part of the State, and in some of the northern counties. Catskill mountains. *Fl.* May – June.

ORDER CXX. JUNCACEÆ. *De Cand.* THE RUSH TRIBE.

Flowers mostly perfect. Perianth dry and glumaceous or rarely somewhat petaloid, 6-leaved in a double series, persistent. Stamens 6 or rarely 3, inserted into the base of the leaflets. Ovary 3-celled, or one-celled from the placentæ not reaching the axis : style single, sometimes very short or almost wanting : stigmas 3, filiform. Capsule 1 – 3-celled, loculicidal, 3- or many-seeded. Testa of the seed sometimes loose, forming an apendage at one or both ends. Albumen fleshy. — Mostly grass-like herbs ; the flowers small, greenish or brownish, in cymes or heads.

1. LUZULA. *De Cand. fl. Fran.* 3. *p.* 158 ; *Endl. gen.* 1047. *WOOD-RUSH.*

[Said to be derived from the Italian word *lucciola*, a gloworm ; because, when moistened with dew, the spikelets glitter like that insect.]

Perianth spreading, glumaceous. Stamens 6 : filaments smooth. Ovary one-celled, with 3 erect ovules at the bottom of the cell. Capsule 1-celled, 3-seeded. Seeds 3, sometimes with an appendage at one end. Leaves soft, flat, mostly hairy.

1. LUZULA CAMPESTRIS, *Linn.* *Common Wood-rush.*

Cespitose ; leaves hairy ; spikes several, ovoid, somewhat umbelled ; leaflets of the perianth acuminate, longer than the obtuse capsules ; seeds with an appendage at the base.— *DC. l. c. p.* 161 ; *Torr. fl.* 1. *p.* 365 ; *Beck, bot. p.* 373 ; *Darlingt. fl. Cest. p.* 231 ; *Hook. fl. Bor.-*

Am. 2. *p.* 188; *Kunth, enum.* 3. *p.* 307. Juncus campestris, *Linn. sp.* 1. *p.* 329; *Michx. fl.* 1. *p.* 190; *Pursh, fl.* 1. *p.* 238; *Bigel. fl. Bost. p.* 140; *Ell. sk.* 1. *p.* 410.

Rhizoma creeping, sometimes tuberous. Culm 6 – 12 inches high, leafy. Leaves 2 – 3 lines long; the margin ciliate with long loose white hairs, and a tuft of similar hairs in the throat of the sheath. Spikes 4 – 8, many-flowered, ovoid or sometimes oblong: one or more of them nearly sessile; the others on unequal peduncles, forming a sort of umbel, which is subtended by 1 – 3 leafy bracts. Perianth brownish, with scarious bracts at the base; the leaflets with a long mucronate tip. Stamens rather shorter than the perianth: anthers large, linear-oblong, yellow. Style exserted, filiform: stigmas slender. Capsule membranaceous, trigonous-obovoid. Seeds ovoid, dark brown, with a conical appendage at the base.

Fields, dry woods, etc.: common. *Fl.* April – May. *Fr.* June.

2. LUZULA PILOSA, *Willd.* *Broad-leaved Hairy Wood-rush.*

Cespitose; leaves broadly linear, hairy; peduncles numerous, in an umbellate corymb, mostly one-flowered, the upper ones bent downward after flowering; leaflets of the perianth acuminate, shorter than the obtuse capsule; seeds with a curved appendage at the tip. — *Willd. enum.* 3. *p.* 393; *Torr. fl.* 1. *p.* 365; *Beck, bot. p.* 373; *Hook. fl. Bor.-Am.* 2. *p.* 188. L. vernalis, *Desv. jour. de bot. p.* 138, ex *Kunth, enum.* 3. *p.* 297. Juncus pilosus, *Linn. sp.* 1. *p.* 329 (in part); *Muhl gram. p.* 200.

Rhizoma creeping. Stem 6 – 10 inches high, slender. Leaves with long white hairs on the margin and towards the base; the radical ones broadly linear. Peduncles 8 – 12, varying from half an inch to three-fourths of an inch long, filiform, several of them finally bent downward; the leafy bracts at the base short. Perianth brown, scarious on the margin. Stamens included. Seed with a falcate appendage at the summit.

Open woods and banks of rivers: northern and western counties. *Fl.* May.

3. LUZULA PARVIFLORA, *Desv.* *Small-flowered Wood-rush.*

Smooth; stems elongated; leaves broadly linear; corymb decompound, loose, the peduncles elongated, capillary; pedicels one-flowered; leaflets of the perianth ovate, acute and mucronate, about the length of the oval obtuse apiculate capsule; seeds without an appendage. — *Desv. jour. de bot.* 1. *p.* 144; *Kunth, enum.* 3. *p.* 300. L. melanocarpa, *Desv. l. c. p.* 142. *t.* 5. *f.* 2; *Torr. fl.* 1. *p.* 366; *Beck, bot. p.* 373; *Hook. fl. Bor.-Am.* 2. *p.* 187; *Kunth, l. c. p.* 299. Juncus parviflorus, "*Rostk. junc.* 26. *t.* 1. *f.* 1, ex *Bong.*" J. melanocarpus, *Michx. fl.* 1. *p.* 190; *Pursh, fl.* 1. *p.* 238; *Bigel. fl. Bost. p.* 140.

Stems 12 – 18 inches high, leafy, slender, usually growing scattered. Leaves 2 – 4 lines wide. Flowers in a loose corymbose panicle, nodding; the longer branches often 2 inches in length: pedicels about 3 lines long. Leaflets of the perianth usually a little shorter than the mature carpel. Capsule with a short abrupt point. Seeds oval, brown, smooth.

Mountains in the northern part of the State, particularly those of Essex county. *Fl.* July. Our plant agrees in every essential character with *L. parviflora* of the north of Europe.

2. JUNCUS. *Linn.; Endl. gen.* 1049. RUSH.

[From the Latin word *jungo*, to join; the stems and leaves having been used for cordage.]

Perianth spreading, glumaceous. Stamens 6, or sometimes 3: filaments smooth. Ovary 3-celled, with numerous ovules. Capsule 3-celled, many-seeded. Seeds sometimes with an appendage at one or both ends. Leaves terete, channelled or flat. Inflorescence cymose or paniculate, sometimes apparently lateral.

* *Stems (scapes) naked, with leafless sheaths at the base: inflorescence lateral.*†

1. JUNCUS EFFUSUS, *Linn.* *Bog-rush. Soft Rush.*

Scape minutely striate, soft; panicle loose, much branched; flowers triandrous; leaflets of the perianth lanceolate, spreading, very acute, as long as the obovoid obtuse capsule. — *Linn. sp.* 1. *p.* 326; *Engl. bot. t.* 836; *Pursh, fl.* 1. *p.* 236; *Muhl. gram. p.* 204; *Ell. sk.* 1. *p.* 405; *Bigel. fl. Bost. p.* 138; *Torr. fl.* 1. *p.* 359; *Beck, bot. p.* 371; *Darlingt. fl. Cest. p.* 227. J. communis, *E. Mey. Junc. no.* 12, ex *Kunth, enum.* 3. *p.* 320.

Scapes 2 – 3 feet high, growing in dense bunches, many of them barren and resembling cylindrical leaves, of a soft and pliable texture, filled with a spongy pith, and tapering above into a long slender point. Panicle bursting from the side of the scape above the middle, sessile; the flowers green. Leaflets of the perianth very acute. Style extremely short: stigmas filiform, spreading. Capsule obtusely triangular. Seeds oblong, acute at each end, but without appendages.

Low moist grounds: very common. *Fl.* June. *Fr.* August. The stalks are sometimes used in making mats, and for the bottoms of chairs.

2. JUNCUS FILIFORMIS, *Linn.* *Slender Rush.*

Scape filiform, smooth; panicle few- (6 – 10-) flowered; stamens 6; leaflets of the perianth lanceolate, acute, rather longer than the obovoid, obtuse, apiculate capsule. — *Linn. sp.* 1. *p.* 326; *Engl. bot. t.* 1175; *Michx. fl.* 1. *p.* 191; *Pursh, fl.* 1. *p.* 236; *Bigel. fl. Bost. p.* 138; *Hook. fl. Bor.-Am.* 2. *p.* 190; *Kunth, enum.* 3. *p.* 318. J. setaceus, *Torr. fl.* 1. *p.* 360; *Beck, bot. p.* 371, excl. syn.

Rhizoma creeping. Scapes 1½ – 2 feet high, scarcely half a line in diameter, clothed at the base with several brown acute sheaths. Panicle bursting from the side of the scape above the middle, contracted and usually erect. Flowers on short pedicels (those in the forks sessile). Capsule shining, obtuse, but pointed with the persistent base of the style. Seeds ovoid-oblong, slightly pointed at each end.

Borders of lakes in the northern and western parts of the State. *Fl.* July. Resembles the European plant very closely.

† The inflorescence in this section, according to Kunth and others, may be regarded as terminal, and subtended by 2 leaves: the exterior being apparently a continuation of the scape, and very long; the inner one reduced to a scale.

3. JUNCUS BALTICUS, *Willd.* *Baltic Rush.*

Scape very faintly striate; panicle decompound, erect; flowers hexandrous; leaflets of the perianth ovate-lanceolate, very acute and mucronate, as long as the elliptical mucronate capsule; style conspicuous; seeds without appendages.—*Willd. in Berl. mag.* 1809. *p.* 298; *Hook. fl. Bor.-Am.* 2. *p.* 189; *Kunth, enum.* 3. *p.* 317. J. glaucus, *Richards. app. Frankl. nar. p.* 11.

Rhizoma creeping extensively. Scape 2 – 4 feet high, very smooth and even, often flexuous or twisted, in the dry state minutely striate, clothed at the base with several long brownish sheaths. Panicle loose; the branches flexuous, slender and very unequal. Flowers shining; the segments of the perianth dark chestnut-colored, with a pale midrib. Capsule triangular, shining, chestnut-colored. Seeds oblong, light brown.

Gravelly shores of the St. Lawrence, and of Lake Ontario. *Fl.* July. A native also of the northern parts of Europe.

** *Culm leafy: leaves terete, nodose: inflorescence terminal: flowers mostly in heads.*

4. JUNCUS NODOSUS, *Linn.* *Smaller Round-headed Rush.*

Stem nearly terete, leafy; leaves conspicuously nodose, terete; inflorescence terminal; heads few, globose, many-flowered; leaflets of the perianth linear-lanceolate, with a long subulate point; stamens 3; capsule triquetrous, attenuated at the summit, about the length of the perianth; seeds oblong, rather acute at each end.—*Linn. sp.* (ed. 2.) 1. *p.* 466? *Muhl. gram. p.* 206; *Torr. fl.* 1. *p.* 363; *Beck, bot. p.* 371.

var. 1. *vulgaris:* heads few (sometimes only 1 or 2), 10 – 20-flowered, rather loose; perianth light brownish purple; stamens 6; capsules a little longer than the perianth, brown. J. nodosus, *Rostk. Junc. p.* 38. *t.* 2. *f.* 2? J. Rostkovii, *Kunth, enum.* 3. *p.* 332. J. polycephalus, *β. & γ., Hook. fl. Bor.-Am.* 2. *p.* 190.

var. 2. *multiflorus:* heads rather numerous, in a more or less compound panicle, many- (20 – 50-) flowered, compact; stamens 3; capsules rather shorter than the greenish perianth. J. echinatus, *Kunth, l. c. p.* 339; *Ell. sk.* 1. *p.* 410?

var. 3. *megacephalus:* heads very large, in a dense cluster, 50 – 60-flowered; stamens 6; capsules a little longer than the tawny perianth.

Rhizoma creeping. Stem, in the first two varieties, 8 – 15 inches high, slender; in *var.* 3, about 2 feet high, and stout. Leaves distinctly nodose. Heads about one-third of an inch in diameter in varieties 1 and 2; about half an inch in the other. Leaflets of the perianth terminating in a long almost awned point. Capsule slender, tapering to a long and very acute summit, opening at the sides and usually closed at the apex. Seeds yellowish, slightly ribbed.

Sandy borders of lakes and rivers; *var.* 3, on the shores of Lake Ontario (*Dr. Gray*). *Fl.* July. *Fr.* September. All the varieties are easily distinguished from *J. polycephalus*, by the attenuate capsules, and oblong (not tailed) seeds.

5. JUNCUS POLYCEPHALUS, *Michx.* *Many-headed Rush.*

Stem terete, leafy; leaves terete, compressed, nodose; inflorescence terminal, compound, longer than the involucral leaves; heads many-flowered, globose; leaflets of the perianth lanceolate, tapering to a slender mucronate point; stamens 3; capsules oblong-triangular, abruptly acuminate, about the length of the perianth or sometimes longer; seeds tailed at each end.— *Michx. fl.* 1. *p.* 192; *Pursh, fl.* 1. *p.* 237; *Torr. fl.* 1. *p.* 364; *Ell. sk.* 1. *p.* 409; *Bigel. fl. Bost. p.* 140; *Beck, bot. p.* 273; *Darlingt. fl. Cest. p.* 228; *Hook. fl. Bor-Am.* 2. *p.* 190 (in part). J. echinatus, *Muhl. gram. p.* 207.

var. 1. *crassifolius:* leaves thick, conspicuously compressed; inflorescence rather compact, very compound; heads 8 – 15-flowered; capsule longer than the perianth, brown.— *Michx. l. c.* J. scirpoides, *Lam. enc.* 3. *p.* 267 ?; *Kunth, enum.* 3. *p.* 340 (var. α.). J. macrostemon, *J. Gay in Laharpe, Junc. p.* 52 (fide *Kunth*). J. Canadensis, *J. Gay in Laharpe, Junc. p.* 64 ? ex *Kunth, l. c.*

var. 2. *paradoxus:* leaves thick; inflorescence very compound, loose; heads many-flowered; capsule about the length of the perianth. J. paradoxus, *E. Mey. Junc. p.* 30 ?; *Kunth, l. c. p.* 341 ? J. fraternus, *Kunth, l. c. p.* 340 ?

var.? 3. *depauperatus:* leaves slender; inflorescence loose and spreading; heads small, 4 – 8-flowered; leaflets of the perianth a little shorter than the capsule, acute but not cuspidate; seeds elliptical, scarcely tailed.

Rhizoma creeping. Stem 1 – 2½ feet high, fistular, erect, somewhat rigid. Leaves distinctly nodose. Inflorescence more or less compound. Heads, in *vars.* 1 and 2, about one-third of an inch in diameter; in *var.* 3, much smaller. Perianth greenish; the leaflets rigid, and terminating in a subulate point, except in *var.* 3, where they are merely acute. Capsule prismatic, with a short abrupt acumination, chestnut-colored. Seeds elliptical, with a conspicuous subulate appendage or tail at each end.

Wet places: *var.* 1, borders of ponds and rivers, frequent; *var.* 2, deep swamps; *var.* 3, Buffalo creek (*Dr. Kinnicutt & Dr. Gray*). *Fl.* July. *Fr.* September. The third variety differs so much from the others in its perianth and seeds, that I was at first inclined to describe it as a distinct species, but have concluded to leave it for further examination.

6. JUNCUS ACUMINATUS, *Michx.* *Sharp-fruited Rush.*

Stem erect, terete; leaves somewhat compressed, with distant nodes; inflorescence decompound, rather dense; heads 3 – 6-flowered, the flowers erect; leaflets of the perianth linear-lanceolate, equal, acute; stamens 3; capsule prismatic, acutely triangular, abruptly acute, one-third longer than the perianth; seed tailed at each end. — *Michx. fl.* 1. *p.* 192; *Pursh, fl.* 1. *p.* 237; *Ell. sk.* 1. *p.* 409; *Torr. fl.* 1. *p.* 363; *Beck, bot. p.* 372; *Darlingt. fl. Cest. p.* 227; *Kunth, enum.* 3. *p.* 335. J. sylvaticus, *Muhl. gram. p.* 206, not of *Willd.* J. acutiflorus, β., *Hook. fl. Bor.-Am.* 2. *p.* 190.

Stem 10 – 15 inches high. Leaves rather distantly nodose, terete-compressed, usually one near the middle of the culm and another near the base. Panicle more or less compound ; the branches slightly spreading. Heads mostly about 3-flowered, but sometimes more, rarely less. Leaflets of the perianth very acute, but not cuspidate. Style distinct. Capsule narrow, with flattish sides, chestnut-color and shining when ripe. Seeds with a subulate appendage at each end.

Sandy borders of lakes, and in bogs : frequent.

7. JUNCUS PELOCARPUS, *E. Mey.* *Brownish-fruited Rush.*

Stem erect, bearing a single leaf, compressed ; leaves setaceous, compressed, obscurely nodose ; panicle pyramidal, spreading ; heads about 2-flowered ; leaflets of the perianth oblong, obtuse, the inner ones a little longer, shorter than the triquetrous-ovate capsule (*Kunth*). — *E. Mey. syn. Luz. p.* 30 ; *Kunth, enum.* 3. *p.* 333. J. acutiflorus, α., *Hook. fl. Bor.-Am.* 2. *p.* 190.

Stem 15 – 18 inches high. Leaves with distant indistinct nodes, tapering to a sharp point. Inflorescence loose and elongated. Heads few, 3 – 6-flowered. Leaflets of the calyx rather obtuse. Stamens 6. Capsule oblong, sharply triangular, mucronate but somewhat obtuse, a little longer than the perianth. Seeds obovoid-oblong, slightly apiculate at each end, pale brown.

New-York (*Jacquemont*). Among my numerous specimens of JUNCI collected in this State, I find none that I can with confidence refer to *J. pelocarpus* of Meyer. The detailed description given above is drawn from two specimens presented to me by Mr. Tuckerman : one of them a Vermont plant, which he compared with an authentic specimen of Meyer's in Sir William Hooker's herbarium ; the other a specimen of *J. acutiflorus*, β., Hook. (*l. c.*), which Mr. Tuckerman obtained from Sir William himself, and which that distinguished botanist regards as identical with *J. pelocarpus*.

8. JUNCUS CONRADI, *Tuckerm. (mst.).* *Conrad's Rush.*

Stem erect, leafy ; leaves erect, compressed, slightly nodose ; inflorescence terminal, decompound, divaricate ; flowers solitary ; leaflets of the perianth lanceolate-acute, shorter than the oblong acuminate-rostrate capsule. — J. viviparus, *Conrad in jour. acad. Phil.* 5. *p.* . . .

Annual. Stems usually cespitose, 6 – 10 inches high, slender, tough. Leaves few, 2 – 4 inches long, with slight transverse partitions. Inflorescence spreading ; the branches slender. Involucral leaves short. Flowers often abortive, or viviparous ; the perianth of a reddish brown color. Stamens 6. Style short : stigmas very long. Capsule one-celled ; the placentæ parietal, very narrow. Seeds ovoid, without appendages.

Borders of ponds, in sandy soil. Long Island. *Fl.* July – August. This well-marked species is very abundant in the pine region of New-Jersey, and has also been found by Mr. Tuckerman in Massachusetts and on the White Mountains.

**** Leaves flat, or channelled on the upper side.*

9. JUNCUS BUFONIUS, *Linn.* *Toad Rush.*

Stems diffuse, leafy, dichotomous above; leaves setaceous, channelled; inflorescence loose, the flowers mostly solitary and remote; leaflets of the perianth lanceolate, conspicuously acuminate, much longer than the oblong obtuse capsule. — *Linn. sp.* 1. *p.* 328; *Engl. bot. t.* 802; *Michx. fl.* 1. *p.* 191; *Pursh, fl.* 1. *p.* 238; *Muhl. gram. p.* 203; *Ell. sk.* 1. *p.* 407; *Torr. fl.* 1. *p.* 363; *Bigel. fl. Bost. p.* 139; *Beck, bot. p.* 372; *Darlingt. fl. Cest. p.* 229; *Kunth, enum.* 3. *p.* 353.

Annual. Stems cespitose, 3 – 6 inches high, terete. Leaves few, shorter than the stem, with membranaceous sheaths. Panicle large, spreading, few-flowered. Perianth pale green, with conspicuous whitish bracts at the base, about one-third longer than the capsule. Stamens 6. Style short, but distinct. Capsule mucronate. Seeds ovoid, brown, striate.

Low grounds, and around ponds: common. *Fl.* June – August. Our plant agrees in all its characters with the European *J. bufonius.*

10. JUNCUS TENUIS, *Willd.* *Slender Rush.*

Stems cespitose, slender, nearly naked, leafy at the base, erect, somewhat compressed, rigid; leaves setaceous-linear, channelled; inflorescence terminal, cymose, more or less compound, shorter than the erect involucral leaves; flowers solitary, unilateral; leaflets of the perianth lanceolate, about one-third longer than the obtuse capsule. — *Willd. sp.* 2. *p.* 214; *Pursh, fl.* 1. *p.* 238; *Ell. sk.* 1. *p.* 406; *Muhl. gram. p.* 200; *Torr. fl.* 1. *p.* 361 (excl. syn. *Engl. bot. & Bich.*); *Bigel. fl. Bost. p.* 138; *Beck, bot. p.* 372; *Darlingt. fl. Cest. p.* 229; *Kunth, enum. p.* 348. J. bicornis, *Michx. fl.* 1. *p.* 191; *Pursh, l. c.*

Perennial. Stem 8 – 15 inches high, tough, leafy only near the base. Leaves striate, somewhat rounded on the back, channelled on the upper surface. Inflorescence consisting of several cymes, with very unequal peduncles; the flowers somewhat racemose or unilateral on the branchlets. Leaflets of the perianth narrow and very acute, shining, greenish. Stamens 6. Style short, but distinct. Capsule globose-ovoid. Seeds ovoid-oblong, with a minute appendage at one end.

Low grounds, road-sides, etc.: common. *Fl.* June – August. I have found a JUNCUS on the seacoast of Long Island, which is perhaps a variety of *J. tenuis* altered by a saline soil. The leaves are nearly terete, with scarcely any traces of a channel, and the panicle is much contracted. In other respects it does not differ essentially from the ordinary form.

11. JUNCUS GREENEI, *Tuckerm. & Oakes.* *Greene's Rush.*

Stem erect, nearly naked, leafy at the base, terete, rigid; leaves setaceous-linear, channelled above, rounded on the back; inflorescence terminal, compound, cymose, contracted, shorter than the erect involucral leaves; flowers solitary, erect, unilateral; leaflets of the perianth lanceolate, shorter than the ovoid-oblong rather obtuse capsule.—*Tuckerm. in Sill. jour.* 45. *p.* 37.

Stems cespitose, 12 – 18 inches high, striate. Leaves nearly cylindrical, with a deep narrow channel on the upper side. Inflorescence consisting of several much contracted unequal cymes, the flowers of which are distinctly unilateral. Leaflets of the perianth very acute, greenish, about one-third shorter than the ripe capsule. Stamens 6. Style short, but distinct. Capsule obtusely triangular, shining, completely 3-celled. Seeds elliptical, a little curved, somewhat acute at each end.

Sandy borders of salt marshes on the seacoast of Long Island? *Fl.* July. *Fr.* August. I have received from Mr. Tuckerman and Mr. Greene, specimens of this plant, collected at Cambridge, Nahant and Plymouth, Massachusetts; and both of these botanists considered it an undescribed species. It is nearly allied to the preceding, but differs in its contracted panicle, nearly terete leaves, short perianth and ovoid-oblong capsule, as well as the more slender pointed seeds. I am not certain that this species grows on Long Island; but I have noticed there, without collecting it, a plant which I supposed was the *Juncus* here described.

12. JUNCUS GERARDI, *Loisel.* *Black Grass.*

Stem simple, leafy, compressed; leaves linear-setaceous, channelled; panicle terminal, compound, cymose, longer than the bracteal leaves; leaflets of the perianth oblong, rather obtuse, a little shorter than the obovoid obtuse mucronate triangular capsule; stamens 6; seeds oblong-ovoid, without appendages, strongly ribbed. — *Loisel. not. p.* 60, fide *Kunth, enum. p.* 352. J. bulbosus, *Pursh, fl.* 1. *p.* 237? *Muhl. gram. p.* 201; *Torr. fl.* 1. *p.* 363; *Bigel. fl. Bost. p.* 139; *Beck, bot. p.* 372. J. cœnosus, *Bich. in Linn. trans.* 12. *p.* 309, *and in Engl. bot. suppl. t.* 2680.

Rhizoma creeping. Stems simple, slender, rigid, distinctly compressed. Leaves 2 – 6 inches long, scarcely half a line wide, rounded and striate underneath, channelled and minutely reticulated above. Panicle rather crowded; the branches very unequal; the leaves at the base resembling those of the stem, only much smaller. Exterior leaflets of the perianth somewhat gibbous, the margin deep chestnut-brown; inner ones with scarious margins. Bracts small, obtuse. Style very distinct. Capsule dark brown when ripe, minutely pointed. Seeds grayish brown, obtuse at each end.

Borders of creeks and ditches in salt marshes: common on Long Island and Staten Island. *Fl.* August. *Fr.* September. This species forms extensive patches, generally following the course of the small rivers that meander through the salt marshes, and is easily distinguished at a distance by its deep green foliage and the dark color of its flowers and fruit. It forms a considerable part of our salt hay.

13. JUNCUS MARGINATUS, *Rostk.* *Grass-leaved Rush.*

Stem leafy, jointed; leaves flat and grass-like; panicle corymbose, compound; flowers in capitate clusters; perianth about as long as the obtuse capsule, the outer segments and bracts somewhat awned, the inner ones obtuse.—"*Rostk. junc.* 38. *t.* 2. *f.* 3;" *Pursh, fl.* 1. *p.* 236; *Muhl. gram. p.* 202; *Torr. fl.* 1. *p.* 362; *Beck, bot. p.* 372; *Darlingt. fl. Cest. p.* 230.

J. aristulatus, *Michx. fl.* 1. *p.* 192; *Kunth, enum.* 3. *p.* 345. J. aristatus, *Pers. syn.* 1. *p.* 385; *Ell. sk.* 1. *p.* 408; *Pursh, l. c.* J. biflorus, *Ell. l. c.*

Stems tuberous at the base, 1 – 3 feet high, erect, compressed. Leaves few, 1½ – 3 lines wide, acute, finely nerved. Panicle often very compound and elongated, longer than the erect involucral leaves at the base. Heads 3 – 6-flowered; the bracts at the base with subulate points. Perianth with the three outer segments narrower, and tapering to a long sharp point; the others mostly obtuse. Stamens 3, inserted at the base of the outer segments. Capsule trigonous-obovoid, very obtuse. Seed oblong-fusiform.

Moist grounds, attaining the greatest size in sandy swamps: frequent in the southern part of the State and on Long Island.

14. JUNCUS STYGIUS, *Linn.* *Large-fruited Rush.*

Stem filiform, erect, rigid, leafy; leaves setaceous, slightly flattened; flowers about 3 in a terminal head; leaflets of the perianth shorter than the oblong elliptical acute capsule; seeds with an appendage at each end.—*Linn. sp.* (ed. 2.) 1. *p.* 467; *Willd. sp.* 2. *p.* 215; *Wahl. fl. Suec.* 1. *p.* 213; *Gray in ann. lyc. N. York,* 3. *p.* 233; *Kunth, enum* 3. *p.* 359.

Root fibrous. Stem 6 – 12 inches high, simple. Leaves usually 3, a little rounded on the back and flat or slightly channelled above, marked internally with slight transverse partitions. Flowers larger than in any of the preceding species; the head subtended by 2 – 3 bracts, the longer of which nearly equals the head: the exterior about as long as the flowers, rigid and mucronate; the inner one membranaceous. Exterior leaflets of the perianth lanceolate, somewhat carinate; inner ones pale and broader. Stamens 6: anthers small, yellow. Ovary tapering at the summit into a distinct style. Capsule triangular, pale brown, acute and somewhat beaked. Seeds about a line long; the loose testa produced into an appendage at each end, so that they are somewhat fusiform.

In an extensive sphagnous swamp, bordering Perch Lake, Jefferson county (*Dr. Gray*). This interesting species has been found nowhere else in North America, except in Newfoundland.

15. JUNCUS TRIFIDUS, *Linn.* *Slender-fringed Rush.*

Stem naked, filiform, 1 – 3-flowered; sheaths ciliate at the throat, the lower ones leafless, upper one with a short setaceous leaf; involucral leaves 1 – 3; capsule elliptical, acuminate-rostrate. — *Linn. sp.* 1. *p.* 326; *Engl. bot. t.* 1482; *Torr. fl.* 1. *p.* 362; *Bigel. fl. Bost. p.* 138; *Beck, bot. p.* 372; *Kunth, enum.* 3. *p.* 355.

Rhizoma creeping. Stem 6 – 10 inches high, rather rigid. Leaf usually solitary near the summit: sheaths with the ligule finely laciniate; the lower ones with only rudimentary leaves. Flowers mostly in a single head, with 2 long setaceous bracts at the base, resembling the leaf of the stem. Leaflets of the perianth ovate, acute. Capsule about as long as the perianth. Seeds elliptical.

Summit of Mount Marcy, Essex county. *Fl.* August. This is a common species in the northern parts of Europe.

GROUP 5. *Flowers with a double or imbricated perianth : the exterior* (calyx) *glumaceous or herbaceous ; the interior with the ordinary texture of petals. Ovary free,* 1 – 3*-celled. Seeds orthotropous. — Herbs, often grass-like.*

ORDER CXXI. COMMELYNACEÆ. *R. Br.* THE SPIDERWORT TRIBE.

Calyx of three herbaceous sepals. Petals 3, colored. Stamens 6 or fewer, hypogynous, some of them abortive or deformed (nectaries, *Linn.)* ; the filaments often clothed with jointed hairs. Ovary 2 – 3-celled : style single : stigma mostly entire. — Mucilaginous herbs. Leaves usually sheathed at the base.

1. COMMELYNA. *Dillen. ; Endl. gen.* 1028. *DAY-FLOWER.*

[Named in honor of two Dutch botanists, JOHN and GASPAR COMMELYN.]

Petals unguiculate, deciduous ; one of them often differing in form from the others, or abortive. Stamens 6 ; 3 or 4 of them abortive, with cruciform anthers. Capsule 3-celled ; the cells 1 – several-seeded.— Diffuse herbs, with lanceolate or ovate leaves and fasciculate flowers.

1. COMMELYNA ANGUSTIFOLIA, *Michx.* *Narrow-leaved Day-flower.*

Assurgent ; leaves linear-lanceolate ; stems slender, rather smooth ; petals unequal, one of them minute ; bracts broadly cordate, pedunculate.—*Michx. fl.* 1. *p.* 24 ; *Pursh, fl.* 1. *p.* 31 ; *Muhl. cat. p.* 4 ; *Beck, bot. p.* 375 ; *Torr. fl.* 1. *p.* 39 ; *Kunth, enum.* 4. *p.* 53.

Root perennial, with fleshy fibres. Stem about a foot high, somewhat branching from the base. Leaves 6 – 8 inches long and half an inch wide ; the border of the sheaths fringed with ferruginous hairs. Involucre or bract somewhat falcate. Petals sky-blue, cordate ; the lower one much smaller. Abortive stamens 4, consisting of blue filaments supporting cruciform yellow anthers which produce no pollen ; one of them smaller than the others. Fertile stamens 2. Style slender : stigma simple.

Borders of swamps about two miles from Flushing (*Mr. P. Dudgeon*). I have examined specimens of this plant collected by Mr. Dudgeon many years ago, but never was so fortunate as to find it myself.

2. TRADESCANTIA. *Linn. ; Endl gen.* 1031. *SPIDER-WORT.*

[In honor of JOHN TRADESCANT, gardener to Charles I.]

Petals 3, sessile, marcescent. Stamens 6, all fertile ; the filaments bearded. Stigma obtuse, triangular or dilated. Capsule 2 – 3-celled, with few seeds in each cell. — Flowers in umbels or racemes, terminal or axillary.

1. TRADESCANTIA VIRGINICA, *Linn.* *Virginian Spiderwort.*

Stem erect or assurgent, often somewhat branching; leaves lanceolate-linear, smooth or hairy; flowers in a terminal umbellate cluster; calyx pubescent.—*Linn. sp.* 1. *p.* 288; *Bot. mag. t.* 105; *Michx. fl.* 1. *p.* 193; *Pursh, fl.* 1. *p.* 218; *Ell. sk.* 1. *p.* 380; *Bart. fl. N. Am.* 2. *t.* 41; *Torr. fl.* 1. *p.* 335; *Beck, bot. p.* 376; *Darlingt. fl. Cest. p.* 213; *Kunth, enum.* 4. *p.* 81

Root perennial, consisting of thick fleshy fibres. Stem often in clusters, about a foot high. Leaves about as long as the stem, variable as to breadth and smoothness, sometimes decidedly hairy: pedicels recurved after flowering. Sepals lanceolate-ovate. Corolla usually bright blue, about twice as long as the calyx. Stamens shorter than the corolla: filaments densely clothed with jointed hairs: anthers large and crescent-shaped, yellow. Stigma capitate. Capsule obtusely triangular, covered by the connivent persistent sepals. Seeds 2 – 3 in each cell.

Near Buffalo (*Dr. Kinnicutt*). This is a common plant in gardens. It varies much in the breadth of its leaves, the pubescence, and the color of its flowers. The jointed hairs of the filaments exhibit a remarkable circulation under the microscope.

ORDER CXXII. XYRIDACEÆ. *Kunth.* THE YELLOW-EYED GRASS TRIBE.

Calyx glumaceous, of 3 sepals: 2 of the sepals lateral, somewhat boat-shaped and persistent; the inner one larger, membranaceous and surrounding (in the unexpanded flower) the corolla, caducous. Corolla of 3 unguiculate petals; the claws sometimes more or less united. Stamens 6, inserted into the claws of the petals: 3 of them fertile, with the anthers extrorse; the others sterile and plumose, or wanting. Ovary one-celled with three parietal placentæ, or 3-celled: styles partly united: stigmas often lobed. Ovules orthotropous. Capsule many-seeded. — Rush-like plants, with ensiform or filiform radical leaves, and simple scapes, bearing at the summit a head of flowers imbricated with bracts.

1. XYRIS. *Linn.; Endl. gen.* 1025. *YELLOW-EYED GRASS.*

[From the Greek, *xyros*, acute; in allusion to the pointed leaves.]

Petals with the lamina dilated, entire; the claws nearly distinct. Fertile stamens 3, with linear anthers: abortive stamens (staminodia) laciniate and plumose. Capsule 1- or rarely imperfectly 3-celled. Seeds elliptical or oblong. — Swamp plants, with mostly ensiform leaves and yellow flowers.

1. XYRIS CAROLINIANA, *Walt.* *Common Yellow-eyed Grass.*

Smooth; leaves linear, gladiate; scape somewhat ancipital, much longer than the leaves; head roundish-ovoid; bracts orbicular-obovate; lateral sepals lanceolate, ciliate on the upper part of the keel.—*Walt. fl. Car. p.* 69; *Pursh, fl.* 1. *p.* 33; *Torr. fl.* 1. *p.* 40; *Beck, bot. p.* 370; *Darlingt. fl. Cest. p.* 12; *Kunth, enum.* 4. *p.* 11. X. Jupacai, *Michx. fl.* 1. *p.* 23; *Bigel. fl. Bost. p.* 17. X. flexuosa & anceps, *Muhl. cat. p.* 5. X. flexuosa, *Ell. sk.* 1. *p.* 51. X. bulbosa, *Kunth, l. c.*

Scape often somewhat bulbous at the base, 6 – 18 inches high, distinctly ancipital particularly on the upper part, often twisted or flexuous. Leaves variable in length, sometimes scarcely one-fourth the length of the scape, at other times (particularly in very wet places) more than half its length, 1 – 2 lines wide, flat or twisted. Head about one-third of an inch long; the scales rigid and convex, dull green in the centre, with a yellowish brown margin; the lower ones empty. Lateral sepals strongly carinate, somewhat incurved; the inner one of a thin delicate texture, involving the unexpanded corolla. Petals ovate, crenate; the claws nearly as long as the bracts. Fertile stamens short: anther-cells linear, distinct: filaments cohering with the claws of the petals. Abortive stamens alternating with the fertile ones, purple, laciniate; the segments tufted with jointed hairs. Style as long as the stamens, deeply 3-parted; the stigmas obtuse and entire. Capsule oblong, membranaceous. Seeds minute, numerous, oblong.

Sandy swamps, Long Island; Troy (*Prof. Eaton*). *Fl.* July – August. *Fr.* September.

ORDER CXXIII. ERIOCAULONACEÆ. *L. C. Rich.* THE PIPEWORT TRIBE.

Flowers mixed with hairs or scales, in compact heads, monœcious or diœcious. Calyx of 2 – 3 sepals. Corolla somewhat petaloid. STERILE FL. Corolla tubular or funnel-form; the limb more or less deeply 2 – 3-cleft. Stamens 6 or sometimes only 3: anthers introrse. Pistil rudimentary. FERTILE FL. Corolla of 2 – 3 petals. Ovary 3- (rarely 2-) celled, with a solitary suspended ovule in each cell: style short: stigmas as many as the cells of the ovary, elongated. Capsule 2 – 3-celled, loculicidal, with a single seed in each cell. Embryo at the extremity of farinaceous albumen.— Herbs, growing in water or swamps, with fasciculate-fibrous roots, linear and mostly radical leaves, and the flowers collected in a dense solitary head at the summit of the scape.

1. ERIOCAULON. *Linn.; Kunth, enum.* 3. *p.* 539. *PIPEWORT.*

[From the Greek, *erion*, wool, and *kaulos*, stem; in allusion to the downy stems or scapes of the species first known.]

Heads monœcious or rarely diœcious: the central flowers sterile; the marginal fertile, each with a bract at the base. Calyx of 2 – 3 sepals. STERILE FL. Corolla tubular; the limb 2 – 3-lipped; the segments often with a tubercle or gland on the inside. Stamens 6, rarely 3 – 4. FERTILE FL. Corolla 2 – 3-sepalled, each with a gland below the apex. Ovary 2 – 3-celled: styles distinct or united at the base. — Habit that of the order.

1. ERIOCAULON SEPTANGULARE, *With.* *Pellucid Pipewort.*

Leaves subulate-ensiform, shorter than the striate smooth scape; flowers and scales hairy at the summit; sepals 2; petals 2, in the sterile flowers partly united; stamens 4; capsule 2-celled.—*Hook. in fl. Lond. n. ser. t.* 52, *& Brit. fl.* (ed. 4.) *p.* 346; *Kunth, enum.* 3. *p.* 540. E. pellucidum, *Michx. fl.* 2. *p.* 166; *Pursh fl.* 1. *p.* 92; *Bigel. fl. Bost. p.* 335; *Torr. compend. p.* 350; *Beck, bot. p.* 369.

Root throwing down long whitish fibres into the mud. Leaves broad and clasping at the base, tapering into a long subulate point, conspicuously cellular, and reticulated with transverse bands. Scape very variable in length; on muddy banks, sometimes only an inch or two high, and in deep water (when only the head of flowers rises above the surface) often 3 – 6 feet long, usually marked with 6 – 7 striæ. Head from one-third to a fourth of an inch in diameter, hemispherical, crowded with numerous flowers; the scales or bracts of a dull lead-color (as are the sepals), obovate and membranaceous. Sepals obovate, conduplicate, crowned (as are also the bracts and petals) with short stout white hairs. Corolla white; the sepals of the sterile flower combined below into a funnel-form tube, the limb of each bearing a small black gland, and in the centre of the flower are two other glands which seem to be abortive ovaries. Stamens 4, somewhat unequal: filaments short: anthers roundish-oval, lead-color. Petals of the fertile flower distinct to the base. Styles 2, distinct nearly to the base, subulate.

Lakes and swamps: frequent. *Fl.* August. In Lake George, I have found this species with the scape full 6 feet long. Hooker has clearly proved the identity of the American plant with the rare *E. septangulare* of Scotland.

GROUP 6. *Flowers imbricated with bracts (glumes, scales), and disposed in spikelets; but with no proper floral envelopes or perianth, except in the form of bristles or scales. Ovary one-celled, with a solitary ovule; in fruit, an achenium or caryopsis. Embryo at the extremity of the albumen next the hilum.— Grasses, sedges, or rush-like plants.*

ORDER CXXIV. CYPERACEÆ. *Juss.* THE SEDGE TRIBE.

Flowers often monœcious or diœcious; one in the axis of each scale. Perianth none, or consisting of bristles or scales. Stamens mostly 3, hypogynous. Styles 2 or 3, mostly united. Fruit an achenium. — Culms usually solid, and often triangular. Sheaths of the leaves entire.

CONSPECTUS OF THE TRIBES AND GENERA.

Tribe 1. CYPEREÆ. Flowers perfect. Spikelets distichously imbricated.

1. DULICHIUM. Bristles of the perigynium 6 – 9.
2. CYPERUS. Bristles none.

Tribe 2. FUIRENEÆ. Flowers perfect. Scales imbricated on all sides. Perigynium of three scales or leaflets, often alternating with three bristles. Stamens 3. Stigmas 3.

3. FUIRENA. Character that of the tribe.

Tribe 3. SCIRPEÆ. Flowers perfect. Scales imbricated on all sides (rarely bi-trifarious). Perigynium composed of bristles, hairs or scales, sometimes wanting.

4. ELEOCHARIS. Achenium with bristles at the base, crowned with the bulbous base of the style.
5. SCIRPUS. Style simple at the base. Achenium surrounded with bristles.
6. ERIOPHORUM. Style simple at the base. Achenium surrounded with very long (usually numerous) capillary hairs.
7. FIMBRISTYLIS. Style 2-cleft, compressed and dilated at the base, deciduous. Bristles none.
8. ISOLEPIS. Style simple at the base or somewhat bulbous, deciduous. Bristles none.
9. TRICHELOSTYLIS. Style 3-cleft, more or less bulbous at the base, deciduous. Bristles none.

Tribe 4. HYPOLYTREÆ. Flowers perfect. Scales of the spikes imbricated on all sides, each one-flowered; the flowers with a 1 – 4-valved perigynium.

10. HEMICARPHA. Spikes ovoid; the scales very numerous. Flowers with a single valve, which is sometimes adherent to the fruit. Stamen single. Style 2-cleft. Achenium oblong, biconvex or nearly terete.

Tribe 5. RHYNCHOSPOREÆ. Flowers perfect or polygamous. Spikes mostly few-flowered; the scales irregularly imbricated. Perigynium usually setiform, rarely wanting. Achenium crowned with the beaked or articulated base of the style, mostly corrugated.

11. RHYNCHOSPORA. Spikes few-flowered; the lower scales empty or staminate. Perigynium of 6 or more plumose or rough bristles. Achenium crowned with the articulated persistent base of the style.

Tribe 6. CLADIEÆ. Flowers usually perfect. Scales of the spike irregularly imbricated: one or several of the upper ones fertile; the others empty.

12. CLADIUM. Spike few-flowered. Bristles none. Stamens 2. Achenium subglobose; the pericarp thickened and corky towards the summit.

Tribe 7. SCLERIEÆ. Flowers diclinous. Fertile spikelets one- or rarely 2-flowered. Scales fasciculate; the lower ones empty. Perigynium of 3 scales, distinct from the disk or combined with it, often wanting. Achenium with a bony or crustaceous shell, often seated in a cup-shaped or lobed disk.

13. SCLERIA. Fertile spikelets one-flowered. Achenium globose or ovoid. Disk lobed, annular, or nearly wanting.

Tribe 8. CARICEÆ. Flowers diclinous. Scales of the spikes membranaceous, imbricated on all sides. Achenium wholly enclosed in an urceolate perigynium, which is pervious at the summit.

14. CAREX. Fertile flowers destitute of a setiform appendage.

TRIBE I. *CYPEREÆ. Nees.*

Flowers perfect. Spikelets distichously imbricated, mostly naked, many- (rarely 1-) flowered. Perigynium none or setaceous. Achenium compressed or triangular, rarely beaked with the persistent base of the style.

1. DULICHIUM. *Rich. in Pers. syn.* 1. *p.* 65; *Torr. North Amer. Cyp. in ann. lyc. N. York,* 3. *p.* 247. *DULICHIUM.*

[*Dulichium* is the name of a Grecian island mentioned by Homer; but why applied to this genus, we know not.]

Spikelets elongated, compressed, many-flowered; the scales 2-ranked. Bristles 6 – 9, rigid, retrorsely hispid. Stamens 3. Style very long, 2-cleft. Achenium compressed, linear-oblong, pointed with the long persistent style.—Culm nearly terete, clothed with spreading leaves. Spikes axillary, compound; the spikelets distichously arranged on a common rachis.

1. DULICHIUM SPATHACEUM, *Pers.* *Dulichium.*

Pers. l. c.; Pursh, fl. 1. *p.* 53; *Ell. sk.* 1. *p.* 73. *t.* 2. *f.* 3; *Torr. fl.* 1. *p.* 58; *Beck, bot. p.* 442; *Darlingt. fl. Cest. p.* 17; *Torr. Cyp. l. c. p.* 247; *Kunth, enum.* 2. *p.* 329. D. Canadense, *Pers. l. c; Pursh, l. c.* Schœnus spathaceus, *Linn. sp.* (ed. 2.) 1. *p.* 63. S. angustifolius, *Vahl, enum.* 2. *p.* 225. Scirpus spathaceus, *Michx. fl.* 1. *p.* 32. Cyperus spathaceus, *Linn. syst. p.* 84; *Willd. sp.* 1. *p.* 289; *Muhl. gram. p.* 26; *Bigel. fl. Bost. p.* 19.

Culm 12 – 18 inches high, terete below, obscurely triangular above. Leaves flat, linear, spreading almost horizontally in three directions. Spikes or racemes on short exserted peduncles which proceed from the sheaths of the leaves, each bearing from 8 – 14 narrowly lanceolate spreading spikelets, which are about three-fourths of an inch long. Spikelets 6 – 10-flowered; the rachis flexuous, excavated by the pressure of the achenia. Scales lanceolate, acute, yellowish-ferruginous, with a green keel. Bristles seldom less than 7 and often 9, slightly exserted at maturity. Style attenuated to a long point. Achenium about a line and a half long, smooth and dull, contracted at the base, crowned with the persistent style, which is not articulate.

Borders of ponds, and in swamps: common. *Fl.* July. *Fr.* September. Resembles CYPEREÆ in its distichous spikelets; but in its bristles, and rostrate fruit, it recedes from that tribe.

2. CYPERUS. *Linn.; Torr. Cyp. l. c. p.* 249. *GALINGALE.*

[An ancient Greek name for some plant of this genus.]

CYPERUS, PYCREUS and PAPYRUS, *Lestib., Nees.*

Spikelets with the scales nearly all fertile, and distichously imbricated; the rachilla* usually more or less winged on the angles by the decurrent margin of the scales. Stamens 2 or 3 (rarely solitary), deciduous. Style 2 – 3-cleft, deciduous. Achenium compressed or triangular. — Culms mostly triangular (rarely terete), simple, leafy at the base. Spikelets terminal, capitate or spicate; the spikes or heads disposed in simple or compound umbels; the rays sheathed at the base.

* PYCREUS, P. de Beauv. *Style 2-cleft. Achenium lenticular.*

1. CYPERUS FLAVESCENS, *Linn.* *Yellowish Dwarf Galingale.*

Umbel of 2 – 4 short rays; spikelets linear, 14 – 20-flowered, rather obtuse, clustered at the extremity of the rays; stamens 3; scales obtuse, 1-nerved; achenium minutely wrinkled transversely, nearly orbicular, shining.—*Linn. sp.* 1. *p.* 46; *Muhl. gram. p.* 16; *Ell. sk.* 1. *p.* 67?; *Torr. fl.* 1. *p.* 60, *and Cyp. p.* 250; *Bigel. fl. Bost. p.* 18; *Beck, bot. p.* 421; *Kunth, enum.* 2. *p.* 5.

Perennial. Culm 4 – 10 inches high. Rays of the umbel sometimes very short, so that the spikelets appear fasciculate; the longer ones commonly from half an inch to an inch in length, each bearing from 4 – 10 spikelets, which are crowded mostly in fascicles of 3 – 4 on the rachis of the ray. Spikelets 5 – 8 lines long, of a yellowish color, slightly tapering towards the summit but not acute, sometimes as many as 30-flowered. Scales broadly ovate, thin and membranaceous except on the keel. Stamens always 3, sometimes remaining attached to the rachilla after the fall of the scale.

Boggy places: most frequent in the vicinity of salt water. *Fl.* August – September. Our plant agrees in all respects with the European *C. flavescens.*

2. CYPERUS DIANDRUS, *Torr.* *Diandrous Galingale.*

Umbel of 2 – 5 short rays; spikelets lanceolate-oblong, much compressed, rather acute, many- (14 – 24-) flowered, scattered or fasciculate on the rachis; stamens 2; scales oblong, rather obtuse, one-nerved, membranaceous; achenium oblong-obovate, slightly scabrous, dull; style much exserted, 3 – 4 times the length of the achenium.—*Torr. cat. pl. N. York* (1819), *p.* 90; *fl.* 1. *p.* 61, *and Cyp. p.* 251; *Spreng. syst.* 1. *p.* 217; *Beck, bot. p.* 421; *Darlingt. fl. Cest. p.* 15; *Hook. fl. Bor.-Am.* 2. *p.* 232; *Kunth, enum.* 2. *p.* 6.

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* This is a term applied to the axis of the spikelets.

var. *castaneus*: scales oblong-lanceolate, coriaceous, shining, very closely imbricated; style scarcely exserted; achenium orbicular-obovate, minutely wrinkled transversely.—*Torr. l. c.* C. flavescens, β. castaneus, *Pursh, fl.* 1. *p.* 52. C. castaneus, *Bigel. fl. Bost. p.* 18. C. bicolor, *Bart. fl. Phil.* 1. *p.* 27 (not of *Vahl*).

Culms cespitose, obtusely triangular, 4 – 10 inches high, often weak and reclining. Involucre of 3 very unequal leaves, two of which are 3 – 7 inches long. Umbel often much contracted, so that the clusters of spikelets are nearly sessile; the rays, when elongated, very unequal, each bearing 6 – 12 spikelets: these are flatly compressed, but in the *var.* they are less so. Scales with a broad light brown margin, with yellowish sides and a green keel; in the *var.* longer and narrower, of a dark chestnut-color, and the texture much firmer. Stamens sometimes three in the upper flowers. Style 2-cleft nearly to the base, straight; in the *var.* about twice the length of the achenium, less deeply cleft, and usually making a short double curvature toward the base.

Wet grounds: frequent where the water is brackish; the var. *castaneus* most abundant in the interior of the State. *Fl.* August. *Fr.* September.

3. Cyperus Nuttallii, *Torr.* (Plate CXXXV.) *Nuttall's Galingale.*

Culms cespitose, triquetrous; rays few, short or nearly sessile, loose; spikelets linear-lanceolate, much compressed, acute; scales oblong-lanceolate, acute, rather loosely imbricated; stamens 2; achenium oblong-obovate, very obtuse, dull. — *Torr. in Spreng. neue entd.* 1. *p.* 240; *fl.* 1. *p.* 60, *and Cyp. p.* 252; *Spreng. syst.* 1. *p.* 222; *Beck, bot. p.* 142. C. filicinus, *Vahl, enum.* 2. *p.* 332? *Kunth, enum.* 2. *p.* 14. C. cæspitosus, *Torr. cat. pl. N. York, p.* 89 (not of *Poir.*); *Spreng. syst.* 1. *p.* 224.

Perennial. Culms 4 – 12 inches high, forming dense tufts. Umbel sometimes with very distinct rays, but usually they are very short. Spikelets sometimes compound, closely approximated on the rachis, nearly an inch long and a line and a half wide. Scales distinct at the tips, giving the spikelets a serrate appearance, yellowish brown on the sides; the keel green. Rachilla narrowly winged. Stamens always 2. Style 2-parted to the middle. Achenium gray or brown.

Borders of brackish meadows, near New-York, and on Long Island. *Fl.* August. *Fr.* September. This may be the *C. filicinus* of Vahl, but the description of that species is insufficient for identifying the plant.

** Cyperus proper. *Style 3-cleft. Achenium triangular.*

† *Spikelets alternate, or disposed towards the summit of the rays in a distichous or spiciform manner; the lowest ones often compound.*

4. Cyperus Michauxianus, *Schultes.* *Michaux's Galingale.*

Culm acutely triangular, rather stout; umbel compound, the rays short; involucels 1 – 2-

leaved and setaceous, or wanting; spikelets linear, somewhat terete, 6 – 8-flowered, the lower ones compound; rachilla very broad, easily separating at the joints; scales ovate, rather obtuse; nut triquetrous, partly enclosed in the broad winged margin of the rachilla.—*Schult. mant.* 2. *p.* 123; *Torr. Cyp. p.* 259. C. strigosus, *Lam. ill.* 1. *no.* 726 (not of *Linn.*); *Michx. fl.* 1. *p.* 28. C. erythrorhizus, *Torr. fl.* 1. *p.* 61; *Beck, bot. p.* 421 (not of *Muhl.*).

Annual? Culm 8 – 15 inches high, firm and erect, thickened and reddish toward the root. Leaves commonly shorter than the culm. Involucre 5 – 6-leaved, many times longer than the umbel. Rays 4 – 6; the naked portion scarcely more than an inch long, sometimes compound. Spikelets much crowded on the rays; the lower ones compound, 6 – 8 lines long, at first compressed, but nearly terete when mature. Scales of a firm texture, not scarious on the margin, loosely imbricated, striate. Stamens 3. Style 3-cleft more than half way down. Achenium light brown, slightly acuminate, partly embraced by the auriculate winged margins of the rachilla, irregularly puncticulate.

Borders of salt marshes: common in the neighborhood of New-York, and on Long Island. I have also specimens from Rochester, collected by Dr. Knieskern. *Fl.* August. *Fr.* October. Kunth erroneously refers *C. Michauxianus*, Schult., to *C. strigosus*.

5. CYPERUS STRIGOSUS, *Linn.* (Plate CXXXVI.) *Tall Galingale.*

Umbel simple or compound; rays numerous, elongated; involucels mostly wanting, or setaceous; spikes ovate; spikelets 8 – 10-flowered, linear-lanceolate, flattened, much crowded, spreading horizontally or somewhat refracted; rachilla slender, narrowly winged; scales oblong-lanceolate, conspicuously nerved, rather acute; achenium linear-oblong, triquetrous.—*Linn. sp.* 1. *p.* 47; *Vahl, enum.* 2. *p.* 253; *Pursh, fl.* 1. *p.* 52; *Ell. sk.* 1. *p.* 70; *Muhl. gram. p.* 21; *Torr. fl.* 1. *p.* 62 (excl. syn. *Michx.*), & *Cyp. p.* 261; *Bigel. fl. Bost. p.* 19; *Beck, bot. p.* 421; *Darlingt. fl. Cest. p.* 15; *C A. Mey. in mem. acad. St. Petersb.* (sér. 6.) 1. *p.* 201. *t.* 3; *Kunth, enum.* 2. *p.* 87; *Hook. fl. Bor.-Am.* 2. *p.* 232. C. Euslenii, *Pursh, l. c. p.* 53; *Ell. sk.* 1. *p.* 73.

Culm triquetrous, 1 – 3 feet high; the base somewhat tumid. Umbel 5 – 9-rayed, somewhat spreading; the rays 2 – 6 inches or more in length, sometimes with one or two partial rays; the sheaths at the base terminating above in two bristles. Involucre 5 – 9-leaved, very long. Spikes 1 – 2 inches long and more than an inch in diameter, each consisting of 20 – 80 spikelets which spread on all sides, and, in a mature state, are refracted on the rachis. Spikelets about three-fourths of an inch long, deciduous when old. Scales somewhat loosely imbricated, with a narrow scarious margin; the sides yellowish. Stamens 3. Style 3-cleft about one-fourth of its length. Achenium not half the length of the scale, grayish brown, longitudinally striated with elevated dots arranged in lines.

Wet meadows and low grounds: frequent. *Fl.* August. *Fr.* September. In sterile soils, this species sometimes occurs not more than 2 or 3 inches high, with the spikelets clustered and nearly sessile.

6. CYPERUS REPENS, *Ell.* (Plate CXXXVII.) *Creeping Galingale.*

Rhizoma creeping, tuberiferous; umbel simple, 4 – 6-rayed; involucre much longer than the rays; spikes distichous; spikelets 10 – 14, approximated, linear, compressed, obtuse, somewhat spreading, 12 – 20-flowered; scales oblong, rather acute, slightly mucronate, scarious on the margin; nut oblong, triquetrous; style cleft about half way down.— *Ell. sk.* 1. *p.* 69; *Spreng. syst.* 1. *p.* 224; *Torr. Cyp. p.* 264; *Hook. fl. Bor.-Am.* 2. *p.* 232. C. phymatodes, *Muhl. gram. p.* 23; *Torr. fl.* 1. *p.* 62; *Beck, bot. p.* 42; *Darlingt. fl. Cest. p.* 592; *Kunth, enum.* 2. *p.* 62. C. tuberosus, *Pursh, fl.* 1. *p.* 52 (excl. syn.).

Rhizoma creeping extensively; the branches often terminating in small oval or roundish tubers, about the size of a large pea. These abound in starch, have a sweetish nut-like taste, and are capable of producing new plants. Culm 12 – 18 inches high, acutely triangular. Leaves a little recurved, broad, strongly carinate, of a yellowish green color. Umbel rather erect; the rays 2 – 4 inches long. Spikelets about three-fourths of an inch long, for the most part distichously arranged on the rachis; the lowest ones on the spike often in pairs or fasciculate. Scales yellowish, conspicuously striate, at length a little spreading at the tips. Stamens 3. Achenium acute.

Moist sandy places, particularly on banks of rivers and along the seashore. *Fl.* August. *Fr.* September.

†† *Spikelets aggregated in a capitate or somewhat umbellate manner at the summit of the rays.*

7. CYPERUS FILICULMIS, *Vahl.* *Slender-stalked Galingale.*

Culm triangular, tuberous at the base, often inclined; leaves linear; umbel simple, of 1 – 2 divaricate rays, or wanting; sheaths of the rays pointless; heads globose, dense, composed of 15 – 20 spikelets, which are linear-lanceolate, rather convex, 6 – 10-flowered; rachilla naked; scales loose, ovate, obtuse or emarginate, slightly mucronate, scarious on the margin; achenium obovate-triquetrous, with a short acuminate point.— *Vahl, enum.* 2. *p.* 328; *Pursh, fl.* 1. *p.* 51; *Spreng. syst.* 1. *p.* 218; *Torr. Cyp. p.* 267; *Kunth, enum.* 2. *p.* 95; not of *Schrad. & Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 40. C. mariscoides, *Ell. sk.* 1. *p.* 67; *Torr. fl.* 1. *p.* 63; *Bigel. fl. Bost. p.* 19; *Beck, bot. p.* 422; *Darlingt. fl. Cest. p.* 16. C. Killingæoides, *Pursh, fl.* 1. *p.* 50 (excl. syn.). Scirpus cyperiformis, *Muhl. gram. p.* 41.

Rhizoma creeping. Culms cespitose, rigid and strong, about a foot high, often diverging or almost prostrate, with a cluster of small globose reddish tubers at the base; the sides striate and rather convex. Leaves 1 – 2 lines wide, dull green. Spikes very often clustered in a single sessile head; but there are usually also one, two, and sometimes three rays, each bearing a loose head of spikelets; the heads about an inch in diameter. Spikelets acute. Scales rather open, somewhat coriaceous, with a broad scarious margin, strongly nerved, of a dull yellowish green color. Stamens 3. Style deeply 3-cleft. Achenium two-thirds the length of the scale, striate with dotted lines.

Dry sterile soils: frequent. *Fl.* August. *Fr.* October.

8. CYPERUS GRAYI, *Torr.* (Plate CXXXVIII.) *Gray's Galingale.*

Culm filiform, obtusely triangular, erect, tuberous at the base; leaves setaceous; umbel 4 – 6-rayed, somewhat erect; sheaths of the rays truncate, pointless; heads composed of 5 – 10 spikelets, loose; spikelets linear-lanceolate, compressed, 5 – 7-flowered; rachilla winged; scales ovate, rather obtuse when old, loosely imbricated, hardly scarious on the margin; achenium obovate-triquetrous, abruptly mucronate. — *Torr. Cyp. p* 269. C. mariscoides, *var.* setifolius, *Torr. in Gray's Gram. & Cyp. part* 1. *no.* 75.

Rhizoma creeping. Culms 8 – 12 inches high, cespitose, tough and rigid. Leaves all radical, channelled, scarcely half a line wide. Rays of the umbel 1 – 3 inches long, slightly diverging, each bearing a small loose head of chestnut-colored spikelets. Leaflets of the involucre setaceous. Spikelets 3 – 5 lines long, slightly convex. Scales strongly nerved, not mucronate. Stamens 3. Style 3-cleft to the middle. Achenium two-thirds the length of the scale, finely dotted in lines, gray.

Barren sandy soils, Long Island. *Fl.* August. *Fr.* September – October. Nearly allied to the preceding, but differs in its very slender culm and leaves, umbel of many rays, smaller heads of few spikelets, and winged rachilla.

9. CYPERUS DENTATUS, *Torr.* *Toothed Galingale.*

Rhizoma bearing tubers; umbel compound; the rays 4 – 7, somewhat erect; spikelets 3 – 6 on each partial ray, clustered, ovate-oblong or ovate-lanceolate, ancipital, much compressed, many- (6 – 30) flowered; rachilla naked; scales very acute or mucronate, carinate, a little spreading at the tip; nut depressed-obovate, triquetrous.—*Torr. fl.* 1. *p.* 61, *& Cyp. p.* 271; *Bigel. fl. Bost. p.* 18; *Beck, bot. p.* 421; *Kunth, enum.* 2. *p.* 34. C. parviflorus, *Muhl. gram. p.* 19 (not of *Vahl*). C. micranthus, *Schult. mant.* 2. *p.* 121.

Rhizoma creeping extensively, and bearing small roundish tubers. Culm 6 – 12 inches high; the angles rather obtuse. Leaves somewhat rigid, strongly keeled, pale yellowish green. Rays of the umbel usually 1 – 2 inches long, but often very short: secondary rays about half an inch long. Sheaths of the rays obliquely truncate. Spikelets 3 – 7 lines long, varying from ovate to ovate-lanceolate or broadly linear. Scales closely imbricated, but distinct at the tips, giving the edge of the spikelets a finely serrated appearance; the sides of a bright reddish brown; the keel and part of the back green. Stamens 3. Style 3-cleft. Nut minute, grayish brown, very obtuse, the breadth about two-thirds as great as the length.

Sandy swamps, Long Island. *Fl.* August. *Fr.* September. A neat and very distinct species.

10. CYPERUS INFLEXUS, *Muhl.* *Dwarf Odorous Galingale.*

Umbel contracted, the rays 1 – 3; involucre very long; spikelets collected into ovoid heads, oblong-linear, about 8 flowered; rachilla laterally compressed, straight, winged; scales cuspidate, squarrose at the tip, strongly nerved; stamen solitary; nut obovoid-triquetrous.—*Muhl. gram. p.* 16; *Torr. fl.* 1. *p.* 59, *and Cyp. p.* 273; *Bigel. fl. Bost. p.* 18; *Beck, bot. p.* 421; *Darlingt. fl. Cest. p.* 16; *Kunth, enum.* 2. *p.* 22; *Hook. fl. Bor.-Am.* 2. *p.* 232. C. uncinatus, *Pursh, fl.* 1. *p.* 50 (not of *Poir.*). C. Purshii, *Rœm. & Schult. syst.* 2. *p.* 177. C. pygmæus, *Nutt. in Amer. phil. trans.* (n. ser.) 5. *p.* 142, not of *Cavan. or Rottb.*

Annual? Culms densely cespitose, 1 – 3 inches high. Umbel often sessile, the inflorescence then consisting of aggregated heads of spikelets; but more commonly there are 2 – 3 short rays. Involucre many times longer than the umbel. Spikelets collected in heads of 8 – 16 or more. Scales oblong, gradually attenuated into a long squarrose or recurved point, not scarious on the margin. Stamen always solitary in each flower. Style 3-parted. Achenium gray, triangular, with the sides a little convex.

Banks of rivers and sandy shores of lakes; northern and western parts of the State. *Fl.* August. This little plant exhales, when dried, a strong and durable odor altogether like that of *Trifolium cæruleum.* It is widely diffused throughout North America.

††† *Spikelets few, linear or linear-lanceolate, loosely flowered, somewhat convex, inserted in an irregular manner toward the summit of the rays: achenium nearly as long as the scale.*

11. CYPERUS SCHWEINITZII, *Torr.* *Schweinitz's Galingale.*

Culm triquetrous, with rough angles; umbel simple; rays elongated; spikelets 6 – 8, lanceolate, alternate, approximated, somewhat appressed, 6 – 8-flowered, with a setaceous bract at the base of each; scales ovate, acuminate, mucronate, keeled; style 3-cleft to the base; nut ovate-triquetrous, acute.—*Torr. Cyp. p.* 276. C. alterniflorus, *Schwein. in Long's 2d exped. append.* 2. *p.* 381 (not of *R. Brown*).

Rhizoma tuberous and knotty. Culm 8 – 18 inches high, slender; the upper part rough on the angles. Umbel of 4 – 6 rays, very unequal, the longest rays 2 – 3 inches in length; their sheaths truncate, entire. Spikelets irregularly inserted, and somewhat imbricated toward the summit of the ray, forming a loose oblong head. Scales rather rigid, with a broad somewhat membranaceous margin, yellowish, slightly mucronate below the tip. Rachilla very narrowly winged. Stamens 3. Style about as long as the nut; the segments slender and smooth. Achenium light brown, slightly pointed, rather shorter than the scale.

Dry sandy shore of Lake Ontario, near Braddock's Bay (*Dr. Bradley*). *Fl.* August.

†††† *Spikelets somewhat terete or angular, 2 – 4- (rarely 1-) flowered, forming dense ovate or globose heads at the summit of the rays; the two lowest scales commonly empty.*

12. CYPERUS OVULARIS, *Torr.* *Oval-headed Galinglae.*

Culm acutely triangular; umbel of 1 – 6 rays; involucre 3 – 4-leaved; heads globose, compact; spikelets 2 – 4-flowered (usually only 2 of the flowers fertile), radiated; rachilla winged; scales ovate, rather obtuse, the 2 lowest short and empty; achenium oblong-obovoid, triangular.—*Torr. Cyp. p.* 278. Scirpus echinatus, *Linn. sp.* 1. *p.* 50 ?; *Muhl. gram. p.* 40. Kyllingia ovularis, *Michx. fl.* 1. *p.* 29. Mariscus ovularis, *Vahl, enum.* 2. *p.* 374; *Pursh, fl.* 1. *p.* 58; *Torr. fl.* 1. *p.* 58 (excl. syn. *Ell.*); *Beck, bot. p.* 429; *Darlingt. fl. Cest. p.* 16; *Kunth, enum.* 2. *p.* 121.

Rhizoma short and tuberous. Culm 6 – 18 inches high, smooth on the angles. Rays of the umbel simple, 1 – 2 inches long, sometimes contracted so that the heads are almost sessile; the sheaths at the base obtuse. Heads 4 – 6 lines in diameter, composed of 50 – 100 spikelets which radiate in every direction from the rachis. Spikelets commonly about 3-flowered, short and thick, rather quadrangular than terete. Scales appressed, slightly mucronate, somewhat scarious on the margin; the 2 lowest much shorter than the others. Stamens 3. Achenium dull grayish brown, flattened on the back.

Sandy soils, in both moist and dry situations. *Fl.* August – October.

13. CYPERUS RETROFRACTUS. *Bent-flowered Galingale.*

Umbel simple, the rays numerous, elongated; heads obovate, retrorsely imbricated; spikelets nearly terete, subulate, 1-flowered, the two lowest scales very short, the uppermost one very narrow and involute.—Scirpus retrofractus, *Linn. sp.* 1. *p.* 50; *Willd. sp.* 1. *p.* 304; *Muhl. gram. p.* 40. Mariscus retrofractus, *Vahl, enum.* 2. *p.* 273; *Pursh, fl.* 1. *p.* 58; *Ell. sk.* 1. *p.* 74; *Torr. fl.* 1. *p.* 57; *Beck, bot. p.* 429; *Darlingt. fl. Cest. p.* 592; *Kunth, enum.* 2. *p.* 122.

Culm 2 – 3 feet high, tumid at the base, pubescent, obtusely triangular; the sides very convex. Rays 6 – 10, unequal, 2 – 6 inches long; the sheaths 2-awned. Heads nearly an inch long and half an inch in diameter, very obtuse, obovate or rather turbinate, acute at the base. Spikelets very numerous (50 – 100), slender: the uppermost ones spreading horizontally; the rest bent backward against the peduncle. Scales usually 4 in each spikelet: the two lowest short, ovate, empty; the third lanceolate, fertile; the uppermost one subulate, involving the attenuated summit of the rachilla. Style 3-cleft. Achenium linear, triquetrous, a little shorter than the scale, roughened with very minute elevated dots.

Sandy fields. I am pretty confident that I found this species many years ago on the island of New-York and on Long Island. It grows sparingly about Hoboken, and is not uncommon in pine barrens of New-Jersey.

TRIBE II. *FUIRENEÆ. Nees.*

Spikelets perfect. Scales imbricated on all sides, aristate-mucronate. Perigynium of 3 sessile or unguiculate scales, which are inserted at the angles of the achenium, and sometimes also of three bristles alternating with the scales. Stamens three, opposite the perigynium-scales. Style 3-cleft. Caryopsis triangular.—Spikelets capitate; the heads aggregated or umbellate, axillary and terminal.

3. FUIRENA. *Rottb.; Endl. gen.* 995; *Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 107. *FUIRENA.*

[In honor of G. FUIREN, a Danish botanist.]

Character that of the tribe.

1. FUIRENA SQUARROSA, *Michx.* *Squarrose Fuirena.*

Culm obtusely triangular, sulcate; leaves ciliate; sheaths hairy; spikes clustered (3 – 6 – 12), ovoid; awn as long as the scale; bristles none; perigynium-scales cordate or ovate, unguiculate.—*Michx. fl.* 1. *p.* 37 (in part); *Torr. Cyp. p.* 290; *Kunth, enum.* 2. *p.* 184.

var. 1: achenium about twice the length of its stipe; perigynium-scales ovate, rounded at the base, cuspidate and tipped with a short awn, the claw shorter than the retrorsely scabrous bristle; leaves and sheaths hairy. — *Torr. l. c.* F. squarrosa, *Torr. fl.* 1. *p.* 67; *Beck, bot. p.* 129.

var. 2 (*pumila*): achenium somewhat obovoid, gradually attenuated at the base into a stipe; perigynium-scales ovate-lanceolate, narrowed at the base, obscurely 3-nerved, tapering at the summit into a long cusp or short awn; bristles longer than the nut, retrorsely scabrous; spikes 2 – 6, mostly terminal, sessile; leaves smoothish.—*Torr. fl.* 1. *p.* 68, *and Cyp. l. c.* F. pumila, *Spreng. syst.* 1. *p.* 237; *Schult. mant.* 3. *p.* 546. F. Torreyana, *Beck, bot. p.* 429.

Culm in *var.* 1 a foot or 18 inches high; the spikes 6 – 12 in an irregular terminal umbel or cluster, with occasionally several lateral ones: in *var.* 2, 3 – 6 inches high. Spikes 4 – 6 lines long; the scales hairy, tipped with a slender recurved bristle which is nearly the length of the lamina.

Sandy swamps and bogs. Both varieties occur on Long Island. *Fl.* August. *Fr.* September.

TRIBE III. *SCIRPEÆ. Nees; Torr.*

Flowers perfect. Scales of the spike imbricated on all sides (rarely, by the torsion of the rachilla, bi-trifarious). Perigynium consisting of several (mostly 6) bristles, hairs or linear scales; sometimes wanting.

* *With a perigynium.*

4. ELEOCHARIS. *R. Br. prodr.* 1. *p.* 224; *Torr. Cyp. p.* 296. *SPIKE-RUSH.*

[From the Greek, *elos, eleos,* a marsh, and *chairo,* to delight; from the place of growth.]

Scales of the spike imbricated on all sides, or sometimes imperfectly bifarious. Bristles of the perigynium 3 – 12 (commonly 6, rarely wanting), rigid and persistent, usually rough or hispid. Style 2 – 3-cleft; the base bulbous and persistent, articulated to the ovary. Achenium either lenticular or obtusely triangular, crowned with the bulbous base of the style or tubercle.—Culms simple, leafless, with truncate or mucronate sheaths at the base: spike terminal, solitary, naked.

* ELEOCHARIS proper. *Spike ovate or oblong: scales membranaceous (rarely coriaceous), very numerous, irregularly imbricated. Style mostly 2-cleft. Achenium obovoid, biconvex, smooth: tubercle somewhat corky.*

1. ELEOCHARIS PALUSTRIS, *R. Brown.* *Common Spike-rush.*

Culm terete, striate, spongy; spike oblong-lanceolate; scales somewhat obtuse, the two lowest large, orbicular and empty; bristles hispid, longer than the achenium; style 2-cleft; nut lenticular, smooth (fulvous); tubercle conical-rostrate, acute, distinct.—*R. Br. prodr.* 1. *p.* 224 (in *obs.*); *Smith, Engl. fl.* 1. *p.* 63; *Torr. Cyp. p.* 299; *Kunth, enum.* 2. *p.* 147. Scirpus palustris, *Linn. sp.* 1. *p.* 47; *Pursh, fl.* 1. *p.* 54; *Ell. sk.* 1. *p.* 77; *Muhl. gram. p.* 28; *Torr. fl.* 1. *p.* 45; *Bigel. fl. Bost. p.* 20; *Beck, bot. p.* 425; *Darlingt. fl. Cest. p.* 19. S. glaucus, *Torr. fl.* 1. *p.* 44.

Rhizoma creeping. Culm erect, 1 – 2 feet high, of a soft texture, varying in diameter from filiform to a line and a half. Spike 3 – 6 lines long, many-flowered. Scales fuscous in the middle, with a broad scarious and generally lacerated margin. Bristles 3 – 6, overtopping the tubercle, retrorsely hispid. Stamens 3. Achenium compressed, smooth but dull. Tubercle rostrate-conical, acute, nearly half the length of the achenium, which is contracted into a short neck beneath it.

Swamps and low grounds; the taller and stouter forms growing in water, but sometimes in sand along the shores of rivers and lakes. *Fl.* August. *Fr.* September. I have specimens of an ELEOCHARIS from the western part of the State, which resembles *E. palustris* in many respects; but there are no bristles surrounding the achenium, and the tubercle is very short. It grows from 3 to 10 inches high; the culm slender and nearly terete: the spikes are ovoid-conical. It may be regarded as a provisional species, under the name of *E. calva.*

2. ELEOCHARIS OLIVACEA, *Torr.* *Olive-fruited Spike-rush.*

Culms filiform (often diffuse), compressed, sulcate, soft; spike ovate, usually somewhat obtuse, many-flowered; scales ovate, obtuse, membranaceous; bristles 6 – 8, nearly twice as long as the nut; style 2-cleft; achenium obovoid-lenticular (olivaceous), dull; tubercle conical, rostrate, distinct.—*Torr. Cyp. p.* 300. Scirpus intermedius, *Gray, Gram. & Cyp. part* 1. *no.* 80 (excl. syn.).

Culms cespitose, erect, diffuse or somewhat decumbent, usually about a span long and nearly a line in diameter, but often dwarfish and slender, of a soft flexible texture, with mucronate sheaths at the base. Spikes 3 – 4 lines long, 20 – 30-flowered, sometimes rather acute. Scales closely or somewhat loosely imbricated: one or two of the lowest shorter and bract-like; the others with a narrow scarious margin. Bristles pretty stout, retrorsely hispid. Stamens 3. Achenium smooth, sometimes a little shining, dark olive when ripe. Tubercle rather free around the base, acute or somewhat obtuse, about one-third the length of the achenium.

Wet sandy places, generally partly under water; Long Island, near Babylon, &c. *Fl.* August. *Fr.* September.

3. ELEOCHARIS ROSTELLATA. *Beaked Spike-rush.*

Culm compressed, sulcate; spike ovoid-lanceolate, acute; scales ovate, obtuse, loose, somewhat cartilaginous, with a scarious margin; bristles 4 – 6, longer than the achenium, strong; style 3-cleft; achenium biconvex, shining; tubercle conical-rostrate, confluent, rather obtuse, discolored. — Scirpus rostellatus, *Torr. Cyp. p.* 318.

Culm 12 – 15 inches high, firm and tough, distinctly compressed and deeply striate or sulcate. Spike 3 – 4 lines long, 12 – 15-flowered. Scales a little open by the protrusion of the ripe fruit, light brown. Bristles conspicuously hispid downward. Stamens 3: filaments twice as long as the achenium, and unusually broad: anthers large and elongated, exserted. Achenium very convex in front but scarcely triangular, shining, but, under the lens, uneven with obscure longitudinal ridges; the tubercle appearing like a discolored corky continuation of the achenium.

Penn-Yan, Yates county (*Dr. Sartwell*). I have concluded to remove this plant from the genus SCIRPUS to ELEOCHARIS, as it agrees with the latter in habit, and the discolored summit of the achenium may be regarded as a confluent tubercle.

4. ELEOCHARIS INTERMEDIA, *Schultes.* *Intermediate Spike-rush.*

Culm setaceous, diffuse, compressed, angular and sulcate; spike lanceolate-ovoid, 8 – 10-flowered; scales ovate-lanceolate, somewhat acute; bristles longer than the achenium; style 3-cleft; achenium obovoid, compressed, with an obtuse angle in front, attenuated at the base,

dull; tubercle distinct, rostrate, slender.—*Schult. mant.* 2. *p.* 91; *Torr. Cyp. p.* 91; *Kunth, enum.* 2. *p.* 141. Scirpus intermedius, *Muhl. gram. p.* 31; *Torr. fl.* 1. *p.* 46.

Culms very numerous, cespitose, mostly diffuse or recurved-prostrate, of a firm wiry texture, conspicuously sulcate and somewhat angular, pale green. Sheaths cuspidate. Spike about 2 lines long, rather acute. Scales membranaceous, not scarious on the margin: margin narrow and green; the sides reddish brown. Bristles 6, strong, whitish, retrorsely hispid, a little overtopping the tubercle. Stamens 3. Achenium light brown, very finely striated longitudinally, remarkably attenuated at the base. Tubercle quite free around the base, very slender and acute.

Wet places, particularly in shallow running water: frequent in the northern and western parts of the State. *Fl.* July. *Fr.* August – September.

5. ELEOCHARIS OBTUSA, *Schultes.* *Obtuse-headed Spike-rush.*

Culm terete or slightly compressed, spongy; spike globose-ovoid or globose-oblong, many-flowered; scales very obtuse; bristles longer than the achenium; style 3-cleft; achenium obovate, lenticular, margined, smooth and shining; tubercle much dilated at the base, rather acute, compressed. — *Schult. mant.* 2. *p.* 89; *Torr. Cyp. p.* 302; *Kunth, enum.* 2. *p.* 152. Scirpus obtusus, *Willd. enum. hort. Berol.* 1. *p.* 76; *Rœm. & Schult. syst.* 2. *p.* 126; *Darlingt. fl. Cest. p.* 19. S. capitatus, *Walt. fl. Car. p.* 70; *Pursh, fl.* 1. *p.* 55; *Ell. sk.* 1. *p.* 77; *Muhl. gram. p.* 30; *Torr. fl.* 1. *p.* 45; *Bigel. fl. Bost. p.* 20; *Beck, bot. p.* 424. S. ovatus, *Pursh, l. c.; Muhl. cat. p.* 6.

Culms cespitose, 8 – 15 inches high, erect, contracted immediately below the spike, soft and spongy, clothed at the base with one or more purplish truncate sheaths. Spike thick and obtuse, 50 – 80-flowered, often nearly globose, and sometimes elongated so as to be nearly cylindrical. Scales membranaceous, with a scarious margin and green midrib. Bristles 6, stout and rigid, retrorsely hispid, nearly twice as long as the nut. Stamens 3. Achenium doubly convex, light brown; the margin tumid. Tubercle somewhat axe-form (the breadth greater than the length), with a short obtuse-angled summit.

Bogs, and muddy borders of ponds and rivers: common. *Fl.* June – July. *Fr.* August.

** MITROCARPA, Torr. *Spike ovoid; the scales coriaceous. Bristles* 6, *rigid. Achenium obtusely triangular. Tubercle cuneiform, spongy, nearly as large as the achenium. Style* 3-*cleft.*

6. ELEOCHARIS TUBERCULOSA, *R. Br.* *Large-tubercled Spike-rush.*

Culm terete, filiform, striate; spike globose-ovoid, somewhat acute; scales broadly ovate, very obtuse, loose, coriaceous; achenium oblong, striate and pitted longitudinally; tubercle ovoid, obtuse, nearly as large as the achenium. — *R. Br. prodr.* 1. *p.* 224 (in *obs.*); *Rœm. & Schult. syst. p.* 152; *Torr. Cyp. p.* 307; *Kunth, enum.* 2. *p.* 145. Scirpus tuberculosus, *Michx. fl.* 1. *p.* 30; *Pursh, fl.* 1. *p.* 54; *Beck, bot. p.* 424. S. tuberculatus, *Ell. sk.* 1. *p.* 78.

Culm 8 – 12 inches high, slender and wiry, pale green; the base clothed with one or two obliquely truncated sheaths. Spike 3 – 4 lines long, 12 – 16-flowered. Scales pale green or whitish mixed with light brown, of a firm cartilaginous texture. Bristles 6, strong, longer than the achenium, hispid downward. Stamens 3. Style 3-cleft. Achenium large and bulging out the scale, shining, marked with longitudinal lines and intermediate rows of shallow indentations; thus appearing somewhat reticulated. Tubercle shaped like a cap, mostly obtuse, of a soft spongy texture, whitish, free around the base.

Sandy swamps, Long Island. *Fl.* August. *Fr.* September.

*** SCIRPIDIUM, Nees. *Spike ovate or elongated. Scales membranaceous. Bristles* 1 – 4, *slender and brittle (rarely wanting). Style* 3-*cleft. Achenium triangular; the angles often ribbed.*

7. ELEOCHARIS ACICULARIS, *R. Br.* *Capillary Spike-rush.*

Culm setaceous, angular and sulcate; spike ovoid, compressed, acute, few-flowered; scales oblong, rather obtuse; bristles 3 – 4, short and very slender (sometimes none); achenium obovate-oblong, rather acute at each end, obscurely triangular; the angles prominent, with less distinct intermediate ribs, and transversely striate; tubercle minute, conical-triangular.— *R. Brown, prodr.* 1. *p.* 224 (in *obs.*); *Rœm. & Schult. syst.* 2. *p.* 154; *Torr. Cyp. p.* 308; *Kunth, enum.* 2. *p.* 141. Scirpus acicularis, *Linn. sp.* 1. *p.* 48; *Pursh, fl.* 1. *p.* 54; *Torr. fl.* 1. *p.* 45; *Beck, bot. p.* 424; *Darlingt. fl. Cest. p.* 20. S. trichodes, *Muhl. gram. p.* 30; *Ell. sk.* 1. *p.* 76; *Bigel. fl. Bost. p.* 20. S. capillaceus, *Mich. fl.* 1. *p.* 30. Scirpidium aciculare, *Nees in Linnæa*, 9. *p.* 293. Chætocyperus acicularis, *Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 95.

Annual? Culm 1 – 8 inches long, commonly very slender and hair-like. Spike 2 – 3 lines long, seldom more than 5 – 8-flowered. Scales often barren, greenish, with a purple stripe on each side. Bristles shorter than the nut, very slender and fragile. Stamens 3. Style 3-cleft about half its length. Achenium whitish or pale straw-color, shining, often contracted at the neck, tumid, with ribbed angles, and usually the sides with two ridges and conspicuous transverse lines. Tubercle broad at the base, with a short abrupt triangular beak.

In water, and on the muddy margins of ponds. *Fl.* June – July. *Fr.* August. After a new examination of this plant (which Nees refers to his *Chætocyperus polymorphus*), I cannot find that it differs from *S. acicularis* of Europe. When growing in water, the culms are quite capillary; but in drier situations, they are stouter and dwarfish, being sometimes scarcely more than an inch high, and forming large patches.

8. ELEOCHARIS TENUIS, *Schult.* *Slender Spike-rush.*

Culm filiform, quadrangular, with the sides concave; spike elliptical, somewhat acute at each end; scales ovate, obtuse; bristles 2 – 3, or none; achenium obovoid-triangular, with the angles prominent, strongly pitted and somewhat corrugated transversely, often slightly

papillose, crowned with a minute short triangular tubercle. — *Schult. mant.* 2. *p.* 89; *Torr. Cyp. p.* 309; *Kunth, enum.* 2. *p.* 145. Scirpus tenuis, *Willd. enum.* 1. *p.* 76; *Muhl. gram. p.* 27; *Torr. fl.* 1. *p.* 44; *Bigel. fl. Bost. p.* 21; *Beck, bot. p.* 425; *Darlingt. fl. Cest. p.* 20. S. quadrangulatus, *Muhl. cat. p.* 6 (not of *Michx.*).

Culms scarcely thicker than a horsehair, erect, 6 – 15 inches long, acutely quadrangular; the base clothed with one or two purple truncate sheaths. Spike, when young, rather obtuse. Scales dark chestnut-colored, with a white scarious margin; several of the lowest ones larger and empty. Bristles short, slender and fugacious. Style 3-cleft. Achenium whitish or of a light brown color, much shorter than the scale, distinctly triangular, with the sides strongly pitted in transverse rows, and marked likewise with fine longitudinal lines; the summit abruptly contracted into a short neck, on which the minute tubercle stands.

Bogs and wet meadows; usually growing partly in the water. *Fl.* July. *Fr.* August.

9. ELEOCHARIS PYGMÆA, *Torr.* *Dwarf Spike-rush.*

Culm setaceous or acicular, much compressed and sulcate; spike ovate-compressed, few-flowered; scales ovate; bristles mostly longer than the achenium (sometimes wanting), retrorsely scabrous; achenium ovoid, acutely triangular, smooth and shining; tubercle very minute and confluent, or almost wanting.—*Torr. Cyp. p.* 313. Scirpus pusillus, *Pursh, fl.* 1. *p.* 54; *Torr. fl.* 1. *p.* 46 (not of *Vahl*). S. capillaceus, *Ell. sk.* 1. *p.* 75 (excl. syn. *Michx.*).

Culms 1 – 2 inches high, often destitute of spikes, and then appearing like subulate leaves. Spike about a line and a half in length, broadly ovate, 3 – 8-flowered, but seldom perfecting more than one or two achenia: the lowest scale empty, very obtuse; the others more or less acute, especially when old. Bristles 6, whitish, slender. Nut rather acute at each end, but broad in proportion to the length, grayish white. Tubercle extremely minute, forming a mere triangular apex to the achenium.

Salt marshes, and on the banks of rivers as far as the salt water reaches: common near New-York, and on Long Island. *Fl.* August. *Fr.* September.

5. SCIRPUS. *R. Br. prodr.* 1. *p.* 223; *Torr. Cyp. l. c. p.* 316. *CLUB-RUSH.*

[*Scirpus* is an ancient Latin name for the bulrush.]

Spikes many-flowered; the scales imbricated on all sides. Bristles of the perigynium 3 – 6, rigid, persistent, for the most part retrorsely hispid or denticulate. Style 2 – 3-cleft, simple at the base, deciduous. Achenium biconvex or triangular.—Culms mostly triangular, simple, often with leafless sheaths. Spikes conglomerated or corymbose, lateral or terminal, rarely solitary and terminal.

* *Spike solitary, terminal.*

1. Scirpus planifolius, *Muhl.* *Small Flat-leaved Clubrush.*

Culm triquetrous; leaves flat, linear, about as long as the culm; spike oblong, compressed; scales carinate, cuspidate, the lowest one longer than the spike; nut triangular. — *Muhl. gram. p.* 32; *Torr. fl.* 1. *p.* 46, *& Cyp. p.* 316; *Bigel. fl. Bost. p.* 20; *Beck, bot. p.* 424; *Bart. prodr. fl. Phil.* 1. *p.* 33, *and fl. N. Am.* 3. *t.* 86. *f.* 1; *Darlingt. fl. Cest. p.* 20; *Kunth, enum.* 2. *p.* 159. Isolepis planifolia, *Spreng. neue entd.* 3. *p.* 10. Eleocharis planifolia, *Nees in Linnæa*, 9. *p.* 294.

Culms cespitose, about a span high, rough on the angles. Leaves grass-like, carinate, rough on the margin; the lowest ones shorter and broader. Spike about one-fourth of an inch long, at first lanceolate but finally rather ovate, 6 – 7-flowered. Scales somewhat 3-rowed, ovate-lanceolate, yellowish, with a green keel, which is continued beyond the summit into a sharp cusp; the lowest one terminating in a short bristle, usually longer than the spike. Bristles 4 – 6, slender, nearly as long as the achenium, somewhat hairy upward. Stamens 3. Achenium oblong, dull, rather obtuse, minutely puncticulate. Style compressed, pubescent or ciliate, 3-cleft, separating entirely from the achenium.

Woods, and in bogs. *Fl.* June. *Fr.* July. A well characterized and remarkable little species.

2. Scirpus subterminalis, *Torr.* *Floating Clubrush.*

Culm submersed, filiform, leafy at the base; spike oblong-lanceolate (emersed), shorter than the bract at its base; scales ovate-lanceolate; achenium triangular, abruptly acuminated; style 3-cleft. — *Torr. fl.* 1. *p.* 47, *and Cyp. p.* 317; *Beck, bot. p.* 425; *Kunth, enum.* 2. *p.* 173; *Hook. fl. Bor.-Am.* 2. *p.* 229.

Culm 1 – 3 feet long, growing under water, often roughened when dry by the irregular contraction of the pith. Leaves 6 – 18 inches long, filiform, channelled. Spike 3 – 4 lines long, with a narrow straight bract at the base, extending 3 – 8 lines beyond the spike, and appearing like a continuation of the culm. Scales membranaceous, somewhat mucronate. Bristles 6, rigid, retrorsely hispid, nearly as long as the achenium. Stamens 3. Style cleft nearly half way down into 3 smooth divisions. Achenium large for the size of the spike, dark brown, smooth and somewhat shining.

Slow-flowing streams: rare. *Fl.* August. *Fr.* September.

3. Scirpus cæspitosus, *Linn.* *Scaly-stalked Clubrush.*

Culm cespitose, filiform, terete, the sheaths furnished with rudimentary leaves; spike ovoid few-flowered; the two lowest scales bract-like, as long as the spike; bristles smooth; style 3-cleft; achenium obtusely triangular, acute.—*Linn. sp.* 1. *p.* 48; *Engl. bot. t.* 1029; *Torr. fl.* 1. *p.* 47, *and Cyp. p.* 319; *Bigel. fl. Bost. p.* 20; *Beck, bot. p.* 424; *Kunth, enum.* 2. *p.* 159. Eleocharis cæspitosa, *Nees in Linnæa*, 9. *p.* 294.

Culm 2 – 10 inches high, rather rigid, finely striate, densely clothed towards the base with imbricated sheaths, of which the upper ones bear rudimentary leaves. Spikes 2 lines long, 4 – 5-flowered, somewhat compressed. Scales of a yellowish brown color : the lowest one narrow, and usually overtopping the spike ; the next a little shorter ; the others ovate, obtuse. Bristles 6, longer than the achenium.

Wet places on the high mountains of Essex county. *Fl.* July.

** *Culm many-spiked.*

† *Spikes lateral.*

4. SCIRPUS DEBILIS, *Pursh.* (Plate CXXXIX.) *Weak-stalked Clubrush.*

Culm terete, with naked sheaths or leaves at the base, striate ; spikes 3 – 5, ovoid, closely sessile, the culm continued far beyond them ; scales broadly ovate, obtuse, mucronulate ; style 2 – 3-cleft ; achenium broadly obovate, plano-convex, slightly punctate and obscurely rugulose (dark brown and shining), shorter than the rigid bristles. — *Pursh, fl.* 1. *p.* 55 ; *Muhl. gram. p.* 34 ; *Ell. sk.* 1. *p.* 79 ; *Bigel. fl. Bost. p.* 21 ; *Torr. fl.* 1. *p.* 48 ; *Beck, bot. p.* 425 ; *Darlingt. fl. Cest. p.* 21 ; *Torr. Cyp. p.* 320 ; *Kunth, enum.* 2. *p.* 159.

Culms 6 – 18 inches high, cespitose, usually with a few radical flattish or compressed leaves at the base, and one or two naked sheaths. Spikes often solitary, but more commonly 3 (sometimes 5 or 6) growing from the side of the culm several inches below the summit, 3 – 5 lines long. Scales nearly orbicular, concave, membranaceous, mostly obtuse with a small mucronate tip, yellowish on the sides, the centre green. Bristles 4 – 6, strong, sometimes only rudimentary. Stamens 3. Style mostly 2-cleft. Achenium much compressed, very obtuse, the breadth nearly equal to the length, slightly mucronate, dark brown or nearly black when mature ; the surface, when magnified, appearing a little rugulose, or waved transversely.

Borders of lakes and rivulets, particularly in sandy soils : northern and western counties ; also on Long Island. *Fl.* July. *Fr.* August.

5. SCIRPUS TRIQUETER, *Linn.* *Chairmaker's Rush.*

Culm triquetrous or slightly winged, two of the sides concave, the other flat, nearly leafless, or the sheaths at the base bearing one or two short leaves ; spikes 1 – 6, aggregated and sessile, ovoid-oblong ; scales orbicular-ovate, membranaceous, mucronate, pubescent on the margin ; anthers with a subulate fringed tip ; bristles slender, shorter than the achenium ; style 2-cleft ; achenium doubly convex, acuminate.—*Linn. mant. p.* 29 ; *Willd. sp.* 1. *p.* 302; *R. Br. prodr.* 1. *p.* 223 ; *Michx. fl.* 1. *p.* 47 ; *Muhl. gram. p.* 33 ; *Torr. Cyp. p.* 322 ; *Darlingt. fl. Cest. p.* 592 (*suppl.*) ; *Kunth, enum.* 2. *p.* 163. S. Americanus, *Pers. syn.* 1. *p.* 68 ; *Pursh, fl.* 1. *p.* 56 ; *Ell. sk.* 1. *p.* 80 ; *Bigel. fl. Bost. p.* 21 ; *Torr. fl.* 1. *p.* 47 ; *Beck, bot. p.* 425. S. pungens, *Vahl, enum.* 2. *p.* 255. S. mucronatus, *Pursh, l. c.*

Culm 3 – 5 feet high, slender, mucronate at the extremity, very acutely triangular, and

sometimes almost winged ; the sheaths often bearing one or more leaves several inches in length. Spikes in a dense cluster, either near the summit, or some distance from the same. Scales often emarginate, with the midrib produced into a point nearly a line in length ; the sides rusty colored : margin scarious and somewhat pubescent. Bristles 3 – 5, slender, fragile, retrorsely hispid. Stamens 3 : anthers with a flat subulate slightly fringed point. Achenium dark brown and rather dull, even, very convex but scarcely angular in fruit, abruptly pointed.

Swamps and wet meadows, both salt and fresh : common. *Fl.* August. *Fr.* September. A native of many parts of the world. The culms are extensively used for making rush-bottom chairs.

6. Scirpus mucronatus, *Linn.* *Long-headed Triangular Rush.*

Culm triquetrous, the sides concave and nearly equal, leafy at the base ; spikes 2 – 4, sessile, oblong-lanceolate, acute ; scales ovate, somewhat coriaceous, mucronate, smooth ; anthers acute (not fringed at the tip) ; bristles longer than the achenium ; style 3-cleft ; achenium angular-convex externally, acuminate. — *Linn. sp.* (ed. 2.) 1. *p.* 73 ? ; *R. Brown, prodr.* 1. *p.* 223 ; *Kunth, enum.* 2. *p.* 161.

Culm about two feet high, with one or two leaves at the base, which are sometimes more than a foot in length : these are channelled, obtusely keeled, and attenuated and flattish towards the point. Spikes clustered, 4 – 6 lines long, more elongated and of a lighter color than in *S. triqueter ;* the culm continued beyond them for several inches, and flattened. Scales distinctly carinate above, acute, and terminating in a short thick mucro. Bristles 6, rather slender, hispid downward, one-third longer than the achenium. Stamens 3 : anthers acute, but without a subulate appendage. Achenium obovate, flattish on the inside, prominent and somewhat angular externally, brown.

Margin of ponds near West-Point (*Prof. Bailey*). *Fl.* July. *Fr.* August. I have received this rare species also from Michigan, and from Boston.

7. Scirpus lacustris, *Linn.* *Bulrush.*

Culm terete, leafless ; umbel compound, growing from the side of the culm near the summit ; spikes ovoid or ovoid-oblong ; scales ovate, mucronulate, ciliate ; style 2-cleft ; achenium obovate, plano-convex, shorter than the bristles. — *Linn. sp.* 1. *p.* 48 ; *Michx. fl.* 1. *p.* 31 ; *Pursh, fl.* 1. *p.* 55 ; *Ell. sk.* 1. *p.* 31 ; *Muhl. gram. p.* 32 ; *Torr. fl.* 1. *p.* 48 ; *Beck, bot. p.* 425 ; *Darlingt. fl. Cest. p.* 21 ; *Torr. Cyp. p.* 321 ; *Kunth, enum.* 2. *p.* 164. S. acutus, *Muhl. l. c. ; Bigel fl. Bost. p.* 31 ; *Torr. fl. l. c ; Beck, l. c.* S. validus, *Vahl, enum.* 2. *p.* 268 ; *Pursh, l. c. ; Vahl, l. c.* S. orgyalis, *Raf. ann. nat.* 1820.

Culm 3 – 8 feet high, gradually tapering upward, smooth, tough, filled with pith, sometimes marked with oblong dark brown spots ; the base clothed with several sheaths, which occasionally bear short sheaths. Umbel (or rather cyme) growing from one to three inches below the summit of the culm. Spikes nearly one-third of an inch long, mostly ovoid but sometimes

oblong, aggregated in threes at the summit of the peduncles or divisions of the umbel. Scales often emarginate, brown, minutely pubescent, generally marked with two or more curved wrinkles. Bristles 4 – 6, stout, hispid downward. Stamens 3. Achenium dark brown when mature, strongly convex in front, flat internally.

Lakes, freshwater ponds, and swamps : frequent. *Fl.* July. *Fr.* August. A native of most parts of the world.

†† *Spikes terminal.*

8. SCIRPUS MARITIMUS, *Linn.* *Sea Clubrush.*

Culm triquetrous, leafy ; umbel simple or compound, often of few spikes and sessile, shorter than the involucre ; spikes ovoid-oblong (large and thick), rather obtuse ; scales ovate, lacerately 3-cleft or 3-toothed, the midrib produced into a short recurved bristle ; style 3-cleft ; achenium broadly obovate, lenticular, smooth and shining, much longer than the slender bristles. —*Linn. sp.* 1. *p.* 51 ; *R. Br. prodr.* 1. *p.* 224 ; *Nees in Wight's contrib. p.* 111, *and Cyp. in Endl. & Mart. fl. Bras. p.* 105 ; *Bigel. fl. Bost. p.* 21 ; *Beck, bot. p.* 426 ; *Gray, Gram. & Cyp. part* 1. *no.* 82 (in part) ; *Torr. Cyp. p.* 322 ; *Kunth, enum.* 2. *p.* 167. S. macrostachyos, *Muhl. gram. p.* 45 (in part) ; *Torr. fl.* 1. *p.* 50 (in part). S. maritimus, *β.* macrostachyos, *Michx. fl.* 1. *p.* 32 (in part). S. robustus, *Pursh, fl.* 1. *p.* 56 (in part).

Culm 1 – 4 feet high, thick, smooth, leafy below. Leaves 2 – 5 lines wide, carinate. Involucre about 2-leaved, foliaceous. Spikes 3 – 20, nearly an inch in length and very thick, sometimes aggregated and sessile, but usually forming somewhat compound corymbs. Scales membranaceous, somewhat pubescent, chestnut-colored ; the summit a little cleft each side of the midrib, which is produced into a recurved cusp or bristle about two lines long, giving the spike a squarrose appearance. Bristles 3 – 4, very slender, about two-thirds the length of the achenium, hispid downward. Achenium large, nearly orbicular, much compressed, dark brown and polished, tipped with the minute persistent base of the style.

var.? FLUVIATILIS : umbel somewhat compound ; spikes ovoid (large and thick), acute ; nut obovoid-triangular, narrowed downward (dull), acuminate, as long as the (6) rigid bristles. — *Torr. Cyp. l. c.* S. maritimus, *Ell. sk.* 1. *p.* 86 ? ; *Gray, Gram. & Cyp. l. c.* (in part). S. macrostachyos, *Muhl. gram. l. c.* (in part). S. badius, *Presl ? Kunth, enum.* 2. *p.* 168 ?

Culm and leaves as in the preceding. Umbel composed of 10 – 20 spikes ; the principal rays about 5 ; the divisions bearing 2 – 3 or more clustered spikes. Involucre 3 – 5-leaved. Spikes nearly an inch long and about half an inch in diameter, rather acute, even in fruit. Scales pale brown, with a recurved cusp or bristle. Bristles mostly 6, straight and stout ; the longest somewhat exceeding the point of the achenium. Style unequally 3-cleft. Achenium about 2 lines long, the sides flattish, gradually narrowed toward the base.

Salt marshes and ditches : never far from salt water : common near New-York and on Long Island. Var. *fluviatilis* in swamps on the borders of lakes and rivers, always in fresh or only slightly brackish water ; common in the western part of the State. *Fl.* August. *Fr.* September. I am still uncertain whether the freshwater variety of this plant should not be

regarded as a distinct species. The European *S. maritimus* (of which my specimens are not good), seems to embrace the same two forms as ours.

9. Scirpus atrovirens, *Muhl.* *Dark Green Clubrush.*

Culm triangular, leafy; umbel compound, proliferous; involucre about 3-leaved; spikes ovoid, acute, glomerated in dense heads of 15 to 20; scales ovate, mucronate, pubescent; bristles as long as the achenium; style 3-cleft; achenium obovoid, compressed-triangular, tapering towards the base, acuminate, dull. — *Muhl. gram. p.* 43; *Torr. fl.* 1. *p.* 49, *and Cyp. p.* 325; *Beck, bot. p.* 426; *Darlingt. fl. Cest. p.* 22; *Kunth, enum.* 2. *p.* 170. S. polyphyllus, *Vahl, enum.* 2. *p.* 274?; *Pursh, fl.* 1. *p.* 57 (excl. syn.).

Culm obtusely triangular, about two feet high, leafy nearly to the summit, smooth. Leaves about one-fourth of an inch wide, mostly shorter than the culms, rough on the margin. Umbel very unequal; one or more of the rays elongated and erect. Spikes many-flowered, 2 – 3 lines long. Scales broadly ovate, keeled, abruptly acuminate and mucronate, at first olive-green and somewhat pubescent, but, when old, fuscous and nearly smooth. Bristles 6, slender, hispid downward, sometimes one or two of them a little longer than the achenium. Stamens 3. Style moderately 3-cleft. Achenium whitish, sharply acuminate, flat, the inside very convex, and obtusely angular externally.

Wet meadows and swamps: common. *Fl.* July. *Fr.* August.

10. Scirpus brunneus, *Muhl.* *Brown-headed Clubrush.*

Culm triangular, leafy; umbel decompound; involucre 3 – 4-leaved; spikes short-ovoid and ovoid-oblong, somewhat loosely clustered in heads of 5 to 8; scales broadly ovate, rather obtuse, slightly mucronate; style 3-cleft; achenium minute, obovate, plano-convex, with a short acumination, dull, shorter than the somewhat crisped bristles. — *Muhl. gram. p.* 43; *Torr. fl.* 1. *p.* 49, *and Cyp. p.* 326; *Beck, bot. p.* 426; *Darlingt. fl. Cest. p.* 22. S. exaltatus, *Pursh, fl.* 1. *p.* 56; *Ell. sk.* 1. *p.* 87. S. polyphyllus, *Kunth, enum.* 2. *p.* 170; also of *Vahl?*

Stem 2 – 4 feet high, obtusely triangular below, acutely triangular above. Leaves broad, as tall as the umbel; the principal rays about 5, two to three inches or more in length. Spikes commonly rather longer than in the preceding species. Scales keeled, mostly of a brownish color; when old, slightly acute and mucronate. Bristles 6, slender, pubescent downwards, nearly twice as long as the achenium. Stamens 3. Achenium whitish, acuminate with a very short point, flat behind, convex or very obtusely angular in front.

Swamps and borders of ponds, usually in shady places: rare. *Fl.* July. *Fr.* August. Although this species can, in general, be readily distinguished, there sometimes occur what seem to be intermediate forms. *S. atrovirens* is known by its dark green foliage and spikes, more simple umbel, and one or two of the rays elongated and nearly erect, as well as by its denser heads of spikes. In *S. brunneus*, the umbel is larger, the spikes brownish, fewer in a head and less closely aggregated.

Subgenus TRICHOPHORUM. *L. C. Rich.; Torr. Cyp. p.* 330.

Bristles 6, much longer than the achenium, capillary, tortuous, smooth or merely pubescent (not hispid). Style 3-cleft, simple at the base, deciduous. Achenium triangular, somewhat compressed. — Culm leafy. Umbel decompound. Scales of the spike membranaceous.

As TRICHOPHORUM differs from SCIRPUS only in its very long tortuous and nearly smooth bristles of the perigynium, and is moreover connected with the latter by *S. brunneus* and *S. divaricatus*, it cannot rank higher than a subgenus.

11. SCIRPUS (TRICHOPHORUM) ERIOPHORUM, *Michx.* *Brown Wool-grass.*

Culm obtusely triangular above, nearly terete below; umbel terminal, very compound; involucre many-leaved, very long; spikes ovate; scales lanceolate, appressed; bristles much exserted, and investing the mature spikes; achenium smooth. — *Michx. fl.* 1. *p.* 33; *Torr. fl.* 1. *p.* 50, *and Cyp. p.* 330; *Bigel. fl. Bost. p.* 22; *Darlingt. fl. Cest. p.* 23; *Kunth, enum.* 2. *p.* 170. S. eriophorus, *Vahl, enum.* 2. *p.* 282. S. thyrsiflorus, *Willd. enum.* 1. *p.* 78. S. cyperinus, *Kunth, l. c.* Trichophorum cyperinum, *Pers. syn.* 1. *p.* 69; *Pursh, fl.* 1. *p.* 57; *Muhl. gram. p.* 47; *Ell. sk.* 1. *p.* 91. *t.* 3. *f.* 4; *Beck, bot. p.* 426. Eriophorum cyperinum, *Linn. sp.* (ed. 2.) 1. *p.* 77.

Culm 18 inches to 5 feet high, leafy nearly to the summit. Leaves 1 – 2 feet long, flat above, carinate toward the base, rough on the margin; the sheaths brownish and scarious at the throat. Involucre of several very long leaves; their sheathing bases brownish or nearly black. Umbel or panicle usually very large, loose and more or less pendulous, but in the smaller forms somewhat contracted; the spikes all distinct and pedunculate, or clustered 3 – 5 together at the extremity of the rays. Scales rusty colored when mature, with a green keel. Bristles (when extended) 8 – 10 times the length of the achenium, brownish, completely covering the spike, and thus giving it a woolly appearance. Stamens 3. Achenium flat on the inside, obtuse-angled externally, white or brownish, acuminate, dull.

Swamps and wet meadows : common. *Fl.* July. *Fr.* August – September. A very conspicuous plant : easily recognized by its large panicle of very numerous spikes, covered with woolly hairs.

12. SCIRPUS (TRICHOPHORUM) LINEATUS, *Michx.* *Loose-flowered Wool-grass.*

Culm triangular; umbels terminal and lateral, at length nodding; involucre 1 – 2-leaved, shorter than the umbels; spikes oblong, pedunculate; scales ovate, acuminate, somewhat patulous at the tip, carinate; bristles a little exserted. — *Michx. fl.* 1. *p.* 32; *Pursh, fl.* 1. *p.* 56; *Ell. sk.* 1. *p.* 87; *Torr. fl.* 1. *p.* 51, *and Cyp. p.* 322; *Kunth, enum.* 2. *p.* 171. S. pendulus, *Muhl. gram. p.* 44. Trichophorum lineatum, *Pers. syn.* 1. *p.* 69; *Beck, bot. p.* 427. Isolepis lineata, *Rœm. & Schult. syst.* 2. *p.* 117.

Culm 1 – 2½ feet high, very leafy, distinctly triangular. Leaves rough on the margin; the

sheaths loose at the throat, several of the upper ones bearing umbels. Terminal umbel largest, somewhat paniculate, at first erect but finally pendulous; the lateral ones sometimes wanting. Spikes 3 – 4 lines long. Scales loosely imbricated at the tip so as to appear somewhat squarrose, ferruginous, with a somewhat prominent keel. Bristles very slender, smooth, crisped and entangled, at maturity projecting a little beyond the scale. Stamens 3. Style somewhat unequally 3-cleft, smooth. Achenium obovate, acuminate, obtusely angular externally, flattish on the outer side, minutely papillose, pale brown when ripe.

Boggy places; near Poughkeepsie (*Mr. P. Dudgeon*). I have seen no specimens of this plant, collected within the limits of our State, except those gathered by Mr. Dudgeon many years ago; but it will probably yet be found abundantly in some of the counties bordering Pennsylvania.

6. ERIOPHORUM. *Linn.; Torr. Cyp. p.* 334. COTTON-GRASS.

[Named from the Greek, *erion*, wool, and *phero*, to bear; the achenia being surrounded with long soft hairs.]

Scales of the spike imbricated on all sides, usually membranaceous, numerous. Bristles (hairs) of the perigynium numerous (rarely as few as 6), capillary, flat, very long, collected into fascicles at the base of the achenium, and forming a silky or woolly tuft. Stamens 3. Style 3-cleft, simple at the base, deciduous.—Culms mostly leafy. Spikes terminal, rarely solitary, usually in a more or less compound umbel or cyme; when mature, clothed with long silky hairs.

* *Spike solitary.*

1. ERIOPHORUM ALPINUM, *Linn.* (Plate CXL.) *Alpine Cotton-grass.*

Culm acutely triangular, filiform, somewhat rough, with short subulate leaves at the base; spike oblong; scales somewhat coriaceous, keeled; hairs 6, crisped. — *Linn. sp.* 1. *p.* 53; *Engl. bot. t.* 311; *Torr. fl.* 1. *p.* 65, *and Cyp. p.* 334; *Bigel. fl. Bost. p.* 23; *Beck, bot. p.* 427; *Kunth, enum.* 2. *p.* 176. E. Hudsonianum, *Michx. fl.* 1. *p.* 334. Trichophorum alpinum, *Pursh, fl.* 1. *p.* 57; *Muhl. cat. p.* 7. T. alpinum, *β.* Hudsonianum, *Pers. syn.* 1. *p.* 70. T. Hudsonianum, *Nutt. gen.* 1. *p.* 36.

Rhizoma creeping, throwing up numerous filiform culms, which are naked except near the base. Leaves 3 – 8 lines long, pungent, erect, triangular and channelled on the upper side: sheaths closely embracing the culm; the lowest ones nearly naked, or only with cuspidate rudimentary leaves. Spike 3 lines long, somewhat compressed. Scales oblong-lanceolate, obtuse, yellowish brown; the lowest one bractlike, somewhat mucronate, and nearly as long as the spike. Hairs 4 – 5 times as long as the scale, constantly 6, white, flat and membranaceous, more or less crisped. Stamens 3 ?: filaments capillary, elongated. Style filiform, 3-cleft to about the middle. Achenium compressed-triangular, acuminated with the base of the style, pale brown, dull.

Sphagnous swamps ; often on high mountains : northern and western parts of the State. *Fl.* May – June. *Fr.* July. The North American *E. alpinum* seems to be identical with the European plant.

2. ERIOPHORUM VAGINATUM, *Linn.* (Plate CXLI.) *Harestail.*

Culm terete below, obtusely triangular above, somewhat rigid ; sheaths inflated ; spike oblong-ovate ; scales scarious ; hairs straight, dense ; anthers linear, elongated. — *Linn. sp.* 1. *p.* 52 ; *Engl. bot. t.* 873 ; *Torr. fl.* 1. *p.* 65, *and Cyp. p.* 335 ; *Beck, bot. p.* 427 ; *Kunth, enum.* 2. *p.* 177. E. cespitosum, *Hort. gram. t.* 39 ; *Pursh, fl.* 1. *p.* 57.

Rhizoma creeping. Culms densely cespitose, about 8 inches to one or two feet high ; the lower part clothed with two or three ventricose sheaths, which are mucronate, or bear only rudimentary (and often discolored) leaves. Radical leaves long, often overtopping the culm, very narrow and almost setaceous. Spike about three-fourths of an inch long. Scales ovate-lanceolate, acuminate, with a broad scarious margin of silver-gray in the young spike, but of a dark livid color in fruit ; several of the lower ones empty, and finally reflexed. Hairs about 40, 3 – 4 times the length of the scale, collected into fascicles of 5 to 7 each, white with a tinge of yellow. Stamens 3 : anthers yellow. Style 3-cleft. Achenium obovate, narrowed below, brown and dull, very obtuse, flattened on the inside, convex externally.

Deep sphagnous swamps, and on high mountains. Western part of the State, and summit of Mount Marcy. *Fl.* July. *Fr.* August.

** *Spikes numerous.*

3. ERIOPHORUM VIRGINICUM, *Linn.* *Rusty Cotton-grass.*

Culm nearly terete below, obtusely triangular above ; leaves flat, very long ; spikes clustered, erect, nearly sessile ; involucre 2 – 3-leaved. — *Linn. sp.* 1. *p.* 52 ; *Michx. fl.* 1. *p.* 34 ; *Pursh, fl.* 1. *p.* 58 ; *Ell. sk.* 1. *p.* 92 ; *Muhl. gram. p.* 49 ; *Torr. fl.* 1. *p.* 66, *and Cyp. p.* 338 ; *Bigel. fl. Bost. p.* 24 ; *Beck, bot. p.* 437 ; *Darlingt. fl. Cest. p.* 23 ; *Kunth, enum.* 2. *p.* 179.

Rhizoma creeping. Culm 2 – 4 feet high, slender, smooth, leafy. Leaves 10 – 18 inches long, 1 – 3 lines wide, rough on the margin, triangular towards the point. Peduncles 3 – 4, somewhat umbellate ; each bearing several ovoid nearly sessile crowded spikes, which are about 3 lines long. Scales ovate, acute, striate, pale on the sides, the keel green. Hairs 40 – 50, tawny, about three times as long as the scale. Stamen solitary : anther oblong. Achenium oblong, triangular, compressed, attenuated downward ; the summit abruptly pointed.

Swamps and bog meadows : frequent. *Fl.* July – August. *Fr.* September. Easily distinguished from all the other species of the genus, by its clustered erect spikes and tawny wool

4. ERIOPHORUM POLYSTACHYUM, *Linn.* *Broad-leaved Cotton-grass.*

Culm nearly terete; leaves flattish, acutely triangular at the point; involucre about 2-leaved; peduncles rough; spikes nodding; scales ovate, acute; achenium obovate, obtuse.— *Linn. sp.* 1. *p.* 52; *Engl. bot. t.* 563: *Pursh, fl.* 1. *p.* 58; *Ell. sk.* 1. *p.* 92; *Muhl. gram. p.* 49; *Torr. fl.* 1. *p.* 66, *and Cyp. p.* 339; *Bigel. fl. Bost. p.* 23; *Beck, bot. p.* 427. E. polystachyum, β., *Michx. fl.* 1. *p.* 34. E. vulgare, *Pers. syn.* 1. *p.* 70. E. latifolium, *Hoppe; Kunth, enum.* 2. *p.* 178.

Culm 1 – 2 feet high, somewhat compressed towards the base, leafy; the sheaths rather loose. Leaves 3 – 6 inches long, 2 – 4 lines wide, flat, except towards the point, which is sharply triangular and usually discolored. Peduncle often simple, unequal, at first erect but finally nodding, rough upward. Spikes 4 – 12, ovoid, 3 – 4 lines long. Scales scarious, of a livid green color when young, but brown in fruit; the midrib somewhat prominent. Hairs 40 – 50, about three-fourths of an inch long, flat, white with a slight reddish tinge. Stamens 3. Style 3- (rarely 4-) cleft; the divisions downy. Achenium narrow downward, flat on the face, angular on the back.

Boggy meadows; northern and western counties: frequent. *Fl.* June. *Fr.* July.

5. ERIOPHORUM ANGUSTIFOLIUM, *Roth.* *Narrow-leaved Cotton-grass.*

Culm somewhat triangular, somewhat rough above; leaves triquetrous, channelled; involucre commonly 1-leaved; peduncles smoothish, nodding; scales broadly ovate, somewhat obtuse, with a strong midrib; achenium elliptical, narrowed at each end, acutely triangular. — "*Schrad. fl. Germ.* 1. *p.* 153;" *Engl. bot. t.* 564; *Pursh, fl.* 1. *p.* 158; *Torr. fl.* 1. *p.* 67, *and Cyp. p.* 339; *Bigel. fl. Bost. p.* 23; *R. Brown in app. Parry's* 1*st voy. p.* 27; *Beck, bot. p.* 427; *Darlingt. fl. Cest. p.* 24; *Kunth, enum.* 2. *p.* 178. E. tenellum, *Nutt. gen. suppl.*

var. *brevifolium:* culm quite smooth; upper leaves very short, triquetrous; involucre much shorter than the spikes, lanceolate (discolored); hairs somewhat crisped. *Torr. l. c.*

Culm about 18 inches high, smooth. Leaves scarcely a line wide, the sides folded so as to form a triangular channel, and about an inch and a half of the upper extremity sharply triangular; the lowest ones 6 – 12 inches long; those of the culm 3 – 6 inches (in the *var.* scarcely an inch long). Spikes 4 – 10, ovoid, one or two of them nearly sessile, the others on simple or divided peduncles (very short in *brevifolium*). Scales rather obtuse. Hairs 50 – 60, white, nearly an inch long at maturity (6 – 8 lines in the *var.*). Stamens 3: anthers linear, elongated. Style filiform, deeply 3-cleft. Achenium linear-elliptical, scarcely half as broad as in *E. polystachyum.*

Sphagnous swamps, in the western and northern parts of the State; var. *brevifolium*, near Utica (*Dr. Gray*). *Fl.* June. *Fr.* July – August.

** *Without a perigynium.*

7. FIMBRISTYLIS. *Vahl, enum.* 2. *p.* 285 ; *Torr. Cyp. p.* 343. *FIMBRISTYLIS.*

[From the Latin, *fimbria*, a fringe, and *stylus*, a style.]

Scales imbricated on all sides. Bristles none. Style compressed, 2-cleft, more or less bulbous at the base, wholly deciduous, mostly ciliate on the margin. — Habit of SCIRPUS.

1. FIMBRISTYLIS SPADICEA, *Vahl.* *Tall Brown-spiked Fimbristylis.*

Culm somewhat compressed, nearly naked ; leaves semiterete, filiform, channelled ; umbel of few rays, simple or compound, erect-spreading ; spikes ovoid-oblong or cylindrical-oblong ; scales rigid, broadly ovate, obtuse ; involucre of 2 – 3 subulate leaves, mostly shorter than the umbel ; stamens 3 ; style broad, strongly fimbriate, slightly bulbous at the base ; achenium obovate, unequally biconvex, punctato-striate.—*Vahl, enum.* 2. *p.* 294 ? ; *Pursh, fl.* 1. *p.* 49 ; *Beck, bot. p.* 423 ; *Torr. Cyp. p.* 346 ; *Kunth, enum.* 2. *p.* 237. F. cylindrica, *Vahl, l. c.; Kunth, l. c.* Scirpus spadiceus, *Linn. sp.* 1. *p.* 51 ? ; *Walt. fl. Car. p.* 30 ; *Ell. sk.* 1. *p.* 84 ; *Muhl. gram. p.* 36 ; *Torr. fl.* 1. *p.* 53. S. puberulus, *Michx. fl.* 1. *p.* 31.

Culm 1 – 3 feet high, nearly terete toward the base, compressed and striate above, rigid, smooth. Leaves nearly radical, 6 – 8 inches long, a little rough on the margin toward the summit ; the sheaths loose and distichous. Spikes 3 – 6 lines long and 2 lines in diameter, becoming almost cylindrical in fruit. Scales much dilated, somewhat mucronate, pale rusty colored and minutely pubescent when young ; chestnut-colored, smooth and shining when old. Stamens 3 : filaments broad. Style divided about one-third of its length ; the segments recurved. Achenium obtuse, whitish, thin on the margin, marked with lines of impressed dots.

Salt marshes, near New-York : rare. *Fl.* August. *Fr.* September.

8. ISOLEPIS. *R. Br. prodr. p.* 221 ; *Torr. Cyp. p.* 348. *ISOLEPIS.*

[From the Greek, *isos*, equal, and *lepis*, a scale.]

ONCOSTYLIS, *Mart.*

Scales of the spike imbricated on all sides. Bristles none. Style 3-cleft, simple at the base, or with a minute bulb from which it separates. Achenium triangular, often crowned with the minute tubercular base of the style. — Habit of SCIRPUS.

1. ISOLEPIS CAPILLARIS, *Rœm. & Schult.* *Hair-like Isolepis.*

Culm capillary, angular and sulcate, nearly naked ; leaves setaceous, serrulate-ciliate, much shorter than the culm ; spikes umbelled, terminal, on short rays, usually 4, ovoid-oblong ; scales somewhat 4-rowed, oblong, obtuse, slightly pubescent ; stamens 2 ; style 3-cleft ; achenium triangular, undulately corrugated transversely. — *Rœm. & Schultes,* 2. *p.* 118 ;

Torr. Cyp. p. 350. Scirpus capillaris, *Linn. sp.* 1. *p.* 49; *Pursh, fl.* 1. *p.* 37; *Muhl. gram. p.* 36; *Torr. fl.* 1. *p.* 52 (excl. syn. *Ell.*); *Bigel. fl. Bost. p.* 23; *Beck, bot. p.* 426; *Darlingt. fl. Cest. p.* 18. S. Muhlenbergii, *Spreng. syst.* 1. *p.* 207.

Annual. Culms densely cespitose, very slender, 3 – 8 inches high, somewhat quadrangular. Leaves mostly radical, 2 – 3 inches long; the sheaths rather loose, membranaceous, hairy at the throat. Umbel of 2 – 3 short setaceous leaves: longer rays of the umbel about half an inch long. Spikes 2½ lines long, somewhat quadrangular, rather obtuse, one or sometimes two of them sessile. Scales rusty brown with a green keel, slightly pubescent especially on the margin. Achenium brown, abruptly contracted at the base, very obtuse, and crowned with a minute depressed tubercle; the angles very prominent.

Sandy fields: frequent. *Fl.* July. *Fr.* August – September. This species belongs to the genus Oncostylis of Martius and Nees.

9. TRICHELOSTYLIS. *Lestib. Cyp. p.* 40; *Torr. Cyp. p.* 355. *TRICHELOSTYLIS.*

[From the Greek, *trichion*, hair, and *stylos*, style; the style being often hairy.]

Scales mostly 4 – 8-ranked, keeled. Perigynium none. Style 3-cleft, more or less bulbous at the base, deciduous below the bulb. Achenium triangular.— Culms simple, leafy at the base, often flattened. Leaves mostly very narrow and channelled. Spikes usually in terminal umbels or heads, rarely solitary.

1. Trichelostylis mucronulata, *Torr.* *Common Trichelostylis.*

Culm compressed, ancipital; umbel more or less compound, spreading; involucre 2 – 3-leaved, shorter than the umbel; spikes oblong, acute, solitary or 2 – 3 at the extremity of the rays; scales about 4-rowed, ovate-lanceolate, mucronate, the points a little spreading; stamens 2 – 3; achenium broadly obovoid-triangular, smooth or minutely verrucose, convex on the sides, the angles margined. — *Torr. Cyp. p.* 355; *Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 79. Scirpus autumnalis, *Linn. mant. p.* 80?; *Pursh, fl.* 1. *p.* 57; *Ell. sk.* 1. *p.* 82; *Muhl. gram. p.* 37; *Bigel. fl. Bost. p.* 23; *Beck, bot. p.* 426; *Darlingt. fl. Cest. p.* 19. S. mucronulatus, *Michx. fl.* 1. *p.* 31. S. Michauxii, *Pers. syn.* 1. *p.* 68. Fimbristylis autumnalis, *Rœm. & Schult. syst.* 2. *p.* 97 (in part).

Culms cespitose, 2 – 12 inches high, often spreading or decumbent, rough on the edges. Leaves flat, very acute, about a line in breadth, smooth; the sheaths slightly bearded at the throat. Umbel mostly decompound; the rays about an inch long: secondary rays bearing 1 – 3 pedunculate rays, with one in the fork. Spikes about a line and a half long. Scales rusty colored, prominently keeled. Style equally 3-cleft, bulbous at the base. Achenium minute, whitish or pale brown, often covered (especially towards the base and summit) with depressed capitate warts.

Bogs and low grounds; also on the sandy banks of rivers, rarely in dry situations: not

rare. *Fl.* July – August. *Fr.* August and September. I suspect that *T. geminiflora* and *T. autumnalis* of Nees, are scarcely distinct from this species. Kunth refers *Sc. mucronulatus*, Michx. to his *Fimbristylis autumnalis.*

TRIBE IV. *HYPOLYTREÆ. Nees.*

Flowers perfect. Scales of the spikes imbricated on all sides, each one-flowered; the flowers with a 1 – 4*-valved (not bristle-form) perigynium.*

10. HEMICARPHA. *Nees in Wight & Arn. contrib. p.* 92, *and Cyp. in Endl. & Mart. fl. Bras. p.* 61. HEMICARPHA.

[From the Greek, *hemisus*, half, and *karphos*, straw or sedge; in allusion to the flowers having a valve only on one side.]

Spikes ovoid. Scales very numerous, finally deciduous. Flowers with a single valve, which is situated opposite the scale, and is sometimes adherent to the fruit. Stamen single. Style 2-cleft. Achenium oblong, biconvex or nearly terete.—Spikes very dense, solitary or several and aggregated, lateral.

1. HEMICARPHA SUBSQUARROSA, *Nees.* *Dwarf Hemicarpha.*

Culms setaceous, compressed and sulcate; involucre 2-leaved, very long, unequal; spikes 2 – 3, ovoid, sessile, lateral; scales rhombic-obovate, with a short mucronate recurved point; achenium obovate-oblong, somewhat compressed. — *Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 61. *t.* 4. *f.* 1. Isolepis subsquarrosa, *Schrad. in Schult. mant.* 2. *p.* 64; *Torr. Cyp. p.* 348. I. micrantha, *Kunth, enum.* 2. *p.* 203 (in part). Scirpus subsquarrosus, *Muhl. gram. p.* 39; *Torr. fl.* 1. *p.* 51. S. minimus, *Pursh, fl.* 1. *p.* 53 (excl. syn.); *Ell. sk.* 1. *p.* 82.

Annual. Culms in dense tufts, commonly about two inches high, leafy at the base. Leaves setaceous. Involucre of 2 leaves: one of them short; the other much longer, and setaceous. Spikes sometimes solitary, about 2 lines long, closely sessile. Scales very numerous, somewhat coriaceous. Valve of the perigynium very thin, lanceolate or cuneate, often bifid, finally adhering to the achenium. Stamen solitary. Style shorter than the achenium, simple at the base; the divisions recurved. Achenium obtuse, nearly terete, pale brown, smooth and dull, mucronulate.

Sandy shores of rivers and lakes in the northern and western parts of the State. *Fl.* July. *Fr.* August. The valve of the perigynium is so very thin and delicate, that it may easily be overlooked.

TRIBE V. *RHYNCHOSPOREÆ. Nees.*

Flowers perfect or polygamous. Spikelets mostly few-flowered. Scales irregularly imbricated, obscurely distichous or trifarious. Perigynium usually of several (rough or plumose) bristles, rarely wanting. Achenium conspicuously beaked with the persistent base of the style, or crowned with an articulated tubercle, often corrugated or sculptured.

11. RHYNCHOSPORA. *Vahl, enum. 2. p. 229; Gray, mon. Rhynch. in ann. lyc. N. York, 3. p. 193, and in Torr. Cyp. l. c. 4. p. 363.* BEAK-RUSH.

[From the Greek, *rhynchos*, a beak, and *spora*, seed.]

Spikelets mostly few-flowered. Scales loosely imbricated: the lowermost smaller and empty; 1 – 3 of the others being of perfect flower; the remainder being staminate or empty. Perigynium composed of 6 (rarely 10 – 12) plumose or rough bristles. Stamens 3 (rarely 2, 6 or 12). Style 2-cleft. Achenium crustaceous, biconvex or nearly globose, smooth or transversely wrinkled, crowned with the dilated persistent and distinct base of the style.—Culms more or less triangular, simple, leafy. Inflorescence terminal and axillary, corymbose, paniculate or fascicled, loosely or densely clustered.

* EURHYNCHOSPORA. *Nut lenticular, or more or less compressed. Bristles of the perigynium naked, rough or hispid.*

1. RHYNCHOSPORA ALBA, *Vahl.* *White Beak-rush.*

Culm triquetrous above; spikelets corymbose-fasciculate (whitish); bristles usually 10, retrorsely hispid; achenium smooth, ovoid-lenticular, narrowed at the base, shorter than the bristles.—*Vahl. enum. 2. p. 236* (var. α.); *Pursh, fl. 1. p. 49*; *Ell. sk. 1. p. 57*; *Torr. fl. 1. p. 54*; *Gray, Rhynch. l. c. no. 24, and in Torr. Cyp. p. 366*; *Beck, bot. p. 428*; *Darlingt. fl. Cest. p. 24*; *Kunth, enum. 2. p. 295.* Schœnus albus, *Linn. sp. 1. p. 51*; *Michx. fl. 1. p. 5*; *Bigel. fl. Bost. p. 17.*

Culm slender, 12 – 18 inches high, smooth. Leaves setaceous, shorter than the culm. Spikelets about 2-flowered, in terminal and axillary clusters, white when young, but becoming brownish with age. Scales lanceolate. Bristles 9 – 11, with rather long erect hairs near the base, retrorsely hispid above, about as long as the achenium including the tubercle. Stamens mostly 2. Achenium biconvex, a little longer than the slender rostrate tubercle.

Sphagnous swamps: common. *Fl.* July – August. *Fr.* August – September. This differs in no respect from the European *R. alba.*

2. RHYNCHOSPORA CAPILLACEA, *Torr.* *Small Capillary Beak-rush.*

Culm triangular, slender; spikelets 3 – 6, mostly in 2 remote clusters; achenium smooth, oblong-ovoid, compressed, about half the length of the retrorsely hispid bristles, and twice as

long as the lanceolate-rostrate tubercle.—*Torr. fl.* 1. *p.* 55 ; *Gray, Rhynch. l. c. no.* 25, *and in Torr. Cyp. p.* 366 ; *Kunth, enum.* 2. *p.* 302. Schœnus setaceus, *Muhl. gram. p.* 6.

Culm 6 – 12 inches high, very slender, smooth. Leaves setaceous, channelled. Spikelets oblong-lanceolate, about 2-flowered ; the terminal ones mostly three ; the lateral ones often solitary, from the sheath of the uppermost leaf. Scales light brown, oblong, mucronate, keeled. Bristles 6, stout. Stamens 3. Achenium attenuated into a short stipe at the base. Tubercle slender and acute.

Swamps, Putnam county (*Dr. Barratt*) ; Penn-Yan, Yates county (*Dr. Sartwell*). Limestone rocks, Jefferson county (*Dr. Gray*). Cranberry marsh near Oneida lake (*Dr. Knieskern*). *Fl.* July.

3. RHYNCHOSPORA FUSCA, *Rœm. & Schult.* *Brown Beak-rush.*

Culm obscurely triangular, striate ; leaves setaceous, channelled ; clusters of spikelets 1 – 3, somewhat capitate ; achenium obovate, somewhat tumid, a little narrowed at the base, about half as long as the upwardly hispid bristles, and about the length of the slender acute tubercle, which is serrulate-scabrous on the margin.—*Rœm. & Schult. syst.* 2. *p.* 81 ; *Hook. brit. fl.* (ed. 4.) 1. *p.* 25 ; *Gray, Rhynch. l. c. no.* 26, *and in Torr. Cyp. p.* 366 ; *Kunth, enum.* 2. *p.* 295. R. alba, *var.* fusca, *Vahl, enum.* 2. *p.* 236. Schœnus fuscus, *Linn. sp.* (ed. 2.) 2. *p.* 1664.

Culm 8 – 12 inches high, very slender, smooth. Fascicles of spikelets in rather close heads. Scales dark brown and shining, mucronate. Bristles 6, very slender, minutely hispid ; three of them longer than the others. Stamens 3. Achenium smooth, but rather uneven. Tubercle much compressed, broad at the base, tapering to a long acute summit.

Genesee county (*Dr. Bradley*) ; Moriches, Long Island (*Dr. Knieskern*). A native also of Europe.

4. RHYNCHOSPORA GRACILENTA, *Gray.* *Tall Slender Beak-rush.*

Culm and leaves very slender ; clusters of spikelets 2 – 4, small, somewhat crowded, the terminal one nearly sessile, lateral ones on exserted peduncles ; achenium smooth, ovoid-lenticular, shorter than the upwardly hispid bristles, and about the length of the slender acuminate tubercle.—*Gray, Rhynch. l. c. no.* 27, *and in Torr. Cyp. p.* 367 ; *Kunth, enum.* 2. *p.* 540.

Culm 1 – 2 feet high, almost capillary, obscurely triangular. Leaves linear-setaceous. Spikelets small and few-flowered, ovoid, sometimes in a single terminal head, but usually with one or two smaller lateral clusters also. Glumes ovate, acute or mucronate, fuscous. Bristles 6, about half as long again as the achenium, minutely hispid upward. Stamens 3. Tubercle subulate from a broad base.

Philipstown, Putnam county (*Dr. Barratt*).

5. RHYNCHOSPORA GLOMERATA, *Vahl.* *Common Beak-rush.*

Culm obtusely triangular; leaves flat; spikelets ovoid-oblong, in corymbose fasciculate clusters which are terminal and axillary, distant, often in pairs; achenium smooth, obovoid-lenticular, margined, attenuated at the base, as long as the tubercle; bristles 6, retrorsely hispid, about as long as the achenium and lanceolate tubercle. — *Vahl, enum.* 2. *p.* 234; *Pursh, fl.* 1. *p.* 48; *Ell. sk.* 1. *p.* 61; *Torr. fl.* 1. *p.* 55; *Beck, bot. p.* 428; *Darlingt. fl. Cest. p.* 24; *Gray, Rhynch. l. c. no.* 29, *and in Torr. Cyp. p.* 367; *Kunth, enum.* 2. *p.* 296. R. capitellata, *Vahl, l. c.; Ell. l. c.* Schœnus glomeratus, *Linn. sp.* 1. *p.* 44; *Muhl. gram. p.* 8. S. capitellatus, *Michx. fl.* 1. *p.* 36.

Culm 1 – 2 feet high. Leaves rough on the margin. Heads of spikelets on included or somewhat exserted peduncles. Scales lanceolate, mucronate, brownish. Bristles stout. Stamens 3. Achenium attenuated into a short thick stipe, smooth and somewhat polished. Tubercle subulate-lanceolate, compressed, about as long as the achenium.

Bogs and low grounds: common. *Fl.* July – August. *Fr.* August – September.

6. RHYNCHOSPORA CEPHALANTHA, *Gray.* *Round-headed Beak-rush.*

Heads somewhat globose, dense, many-flowered, axillary and terminal, often in pairs; spikelets oblong-lanceolate; achenium smooth, orbicular-obovate, margined, narrowed at the base, about as long as the subulate beak, and half the length of the stout hispid bristles. — *Gray, Rhynch. l. c. no.* 30, *and in Torr. Cyp. p.* 368; *Kunth, enum.* 2. *p.* 540.

Culm obtusely triangular, rather stout. Leaves narrowly linear, flat, keeled. Heads mostly 2 – 3 (rarely more except in the Southern States); the upper 2 often in pairs, from one half to three fourths of an inch in diameter. Scales dark brown, oblong, acute or slightly mucronate. Bristles mostly hispid downward, but often upward, sometimes in the same spikelet! Achenium nearly twice as large as in *R. glomerata*, but resembling it in form and in the tubercle, shining, obscurely waved transversely.

Sandy swamps. Islip, &c. Long Island. *Fl.* August. Near the preceding species, but the heads are larger and compact; the achenium also is larger, and the tubercle broader.

TRIBE VI. *CLADIEÆ. Nees.*

Flowers perfect (rarely diclinous). Spikelets 1 – 3-flowered; the scales imbricated in a somewhat trifarious or quadrifarious order; the lowest ones empty. Perigynium none. Stamens 2 – 12. Style 2 – 3-cleft, deciduous, or sometimes with a persistent bulbous base. Achenium with a hard thick shell, smooth or irregularly wrinkled, pointless, or crowned with the persistent base of the style. — Spikelets cymose-paniculate.

12. CLADIUM. *Browne, Jam. p.* 114; *R. Br. prodr. p.* 236. *TWIG-RUSH.*

[From the Greek, *klados*, a branch or twig; but the allusion is not very apparent.]

Spikelets 1 – 2-flowered. Scales few, imbricated in a somewhat trifarious order; the lowest ones empty. Bristles none. Stamens mostly 2. Style 2 – 3-cleft; the divisions often bifid or trifid. Achenium globose-ovoid; the pericarp thickened and corky toward the summit Seed smooth. — Culm leafy. Spikelets mostly in compound axillary and terminal panicles or cymes.

1. CLADIUM MARISCOIDES, *Torr.* *Smooth Twig-rush.*

Culm obscurely triangular; leaves nearly smooth on the margin; cymes compound, 2 – 4-rayed, nearly naked, the rays elongated; spikelets aggregated in heads of 3 – 8 together; style 3-cleft, the divisions entire.—*Torr. Cyp. p.* 372. C. triglomeratum, *Kunth, enum.* 2. *p.* 304 (excluding all the synonymy but that of Nees).* Schœnus mariscoides, *Muhl. gram. p.* 5; *Torr. fl.* 1. *p.* 54; *Bigel. fl. Bost. p.* 17; *Beck, bot. p.* 428.

Culm about 2 feet high, scarcely angular, nearly smooth, about a line and a half in diameter towards the base. Leaves 1 – 2 lines wide, channelled, with a long compressed point, slightly serrulate-scabrous on the margin. Cymes 2 – 3, erect; the lateral ones on long exserted peduncles: primary rays 2 – 4, with several shorter ones. Spikes about 3 lines long, ovoid-oblong when mature, often many of them abortive. Scales about 6, chestnut-brown; the 4 lower ones usually empty; the fifth bearing 2 stamens and an abortive ovary; the uppermost perfect, diandrous. Style filiform, deciduous; the divisions nearly equal, or sometimes two of them united towards the base. Achenium a little more than a line in length, ovoid, with a short abrupt point, somewhat wrinkled longitudinally.

Bog meadows and borders of ponds: frequent. *Fl.* July. *Fr.* August. Resembles *C. mariscus*, R. Brown, in many respects; but that species is much stouter, the leaves strongly serrulate-scabrous on the margin and keel, and the cymes more numerous as well as more compact.

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* Nees, by a mistake which he afterwards corrected, referred (in *Linnæa*, 9. *p.* 301) this plant, which he considered *Scleria triglomerata*, to CLADIUM, and named it *C. triglomeratum*. This error has been strangely adopted by Kunth, who remarks that he has seen a specimen of mine under the name of *Sc. triglomerata*. This specimen must have had the wrong ticket attached to it by some accident.

TRIBE VII. *SCLERIEÆ. Nees.*

Flowers diclinous (monœcious or rarely diœcious). Fertile spikelets one-flowered. Scales fasciculate or irregularly imbricated; the lower ones empty, often seated in a cup or torus. Perigynium 3 – 5-lobed or entire, sometimes consisting of tooth-like processes, either free or combined with the torus, sometimes wanting. Stigmas 3 (rarely 2). Achenium nut-like; the shell usually bony or somewhat crustaceous.—Culms triangular. Inflorescence in glomerate spikes, or racemose, axillary and terminal.

13. SCLERIA. "*Berg. act. Holm.* 1765, ex *Endl. gen.* 964." *NUT-RUSH.*

[From the Greek, *skleros*, hard; the achenia of many species being bony.]

Fertile spikelets one-flowered; the sterile several-flowered. Torus shallow, saucer-like or lobed. Perigynium coriaceous or crustaceous, sometimes wanting. Achenium globose or ovoid. — Habit that of the tribe.

* SCLERIA proper. *Achenium pitted, and more or less reticulated. Cupula 3-lobed. Perigynium 3-partea.*

1. SCLERIA RETICULARIS, *Michx.* *Sessile-spiked Nut-rush.*

Culm erect, retrorsely scabrous on the angles towards the base; fascicles lateral and terminal, remote, nearly or quite sessile, somewhat branching, rather loosely flowered; scales and bracts smooth; achenium globose, conspicuously reticulated with elevated lines, and deeply pitted between the lines; perigynium 3-lobed, the lobes ovate-lanceolate. — *Michx. fl.* 2. *p.* 167 (not of *Pursh, Ell. & Muhl.*); *Willd. sp.* 4. *p.* 314; *Torr. Cyp. p.* 375.

Culm about a foot or 15 inches high, triangular, somewhat compressed and slender. Leaves $1\frac{1}{2}$ line wide, smooth, flat. Fascicles of spikelets about an inch long; the lateral ones 2 – 3 in number, and very remote, standing on nearly included peduncles. Spikelets in pairs; the sterile lanceolate, on a short stipe at the base of the fertile spikelet, many-flowered; the scales distichous, lanceolate, each bearing 2 stamens: fertile spikelets mostly of 3 ovate, mucronate and carinate scales; the 2 interior embracing the achenium at its base. Style 3-cleft nearly to the base. Achenium crustaceous, exactly globose, whitish or pale brown; the surface strongly reticulated; the interstices oblong and deeply pitted. Perigynium conspicuous, rigid, of a pale greenish color, equally 3-lobed, closely appressed and partly adherent to the achenium.

Sandy swamps and borders of ponds. Suffolk county, Long Island. *Fl.* August. *Fr.* September. Nearly allied to *S. tessellata* of the East Indies.

2. SCLERIA LAXA, *Torr.* *Loose-flowered Nut-rush.*

Culm weak, somewhat diffuse, nearly smooth; fascicles lateral and terminal, remote, on long slender peduncles, somewhat branched, loosely flowered; scales and bracts smooth; achenium globose, pitted, and marked in a somewhat spiral manner with transverse hairy rugæ; perigynium 3-lobed, the lobes ovate-lanceolate.—*Torr. Cyp. p.* 376. S. reticularis, *Muhl. gram. p.* 266; *Pursh, fl.* 1. *p.* 45; *Ell. sk.* 2. *p.* 601?; *Kunth, enum.* 2. *p.* 348, not of *Michx.*

Culm 12 – 18 inches high, slender, acutely triangular, with the angles somewhat winged and slightly rough. Leaves about 2 lines wide, flat, smooth. Peduncles 2 – 6 lines long, compressed, slender and often recurved. Spikelets distant, in pairs, disposed as in the preceding species. Stamens 2. Achenium about a line in diameter (larger than in the preceding species), crustaceous, somewhat shining, whitish, with narrow brown wrinkles which are more or less hairy, pitted in an obscurely reticulate manner. Perigynium deeply 3-lobed, rigid, appressed.

Sandy swamps, Long Island. *Fl.* August. *Fr.* September. A common species in the pine region of New-Jersey, and in some of the Southern States.

** TRACHYLOMIA, Nees. *Achenium ovoid, smooth, somewhat crustaceous. Perigynium obtusely triangular, narrow, entire, reflexed, crustaceous.*

3. SCLERIA TRIGLOMERATA, *Michx.* *Three-clustered Nut-rush.*

Culm rough; leaves broadly linear, smoothish or a little hairy; fascicles lateral and terminal, triglomerate, the lateral ones remote, pedunculate; bracts slightly ciliate; scales cuspidate; nut ovoid-globose, smooth and polished; perigynium annular, whitish, vesicular-papillose. — S. triglomerata, *Michx. fl.* 2. *p.* 168; *Muhl. gram. p.* 260; *Ell. sk.* 2. *p.* 558; *Beck, bot. p.* 430; *Darlingt. fl. Cest. p.* 26; *Torr. Cyp. p.* 380. S. nitida, *Kunth, enum.* 2. *p.* 350. Trachylomia triglomerata, *Nees, Cyp. in Endl. & Mart. fl. Bras. p.* 174.

Culm 2 – 3 feet high, leafy, triquetrous; the angles almost winged. Leaves 2 – 3 lines wide, rough on the margin, often a little hairy underneath. Terminal fascicle or head consisting of 3 distinct clusters of spikelets, each with a foliaceous bract at the base: lateral fascicle composed of few spikelets, remote, usually supported on a long peduncle. Sterile spikelet seated within the upper fertile scale, many-flowered; the scales lanceolate, purplish. Stamens 3. Cupula shallow, entire. Achenium nearly 2 lines in diameter, resembling white enamel, slightly apiculate. Perigynium an obtusely triangular thickened ring, in which the achenium is seated.

Swamps and moist thickets: frequent. *Fl.* July. *Fr.* August.

*** Odontoscleria. *Achenium verrucose. Cupula saucer form, obscurely triangular. Perigynium consisting of 3 – 9 small tooth like cellular crustaceous processes.*

4. Scleria pauciflora, *Muhl.* *Few-flowered Nut-rush.*

Culm slender, smoothish; leaves narrow, with pubescent sheaths; fascicles lateral and terminal, few-flowered, the lateral ones remote, on long peduncles; bracts ciliate; achenium globose-ovoid, verrucose; processes of the perigynium 6. — *Muhl. gram. p.* 267 (in part); *Willd. sp.* 4. *p.* 318 (excl. syn. *Michx.*); *Pursh, fl.* 1. *p.* 46 (excl. syn. *Michx.*); *Ell. sk.* 2. *p.* 559; *Beck, bot. p.* 430; *Darlingt. fl. Cest. p.* 26; *Torr. Cyp. p.* 378; *Kunth, enum.* 2. *p.* 349.

Culm 9 – 18 inches high, triquetrous, slightly rough towards the summit. Fascicles 2 – 3, composed of about 3 pairs of spikelets. Sterile spikelet few-flowered, sessile in the second scale of the fertile. Stamens 3. Fertile spikelet of 3 somewhat coriaceous ovate mucronate scales, which are somewhat ciliate on the keel. Between the sterile spikelet and the fertile scale which embraces it, is a filiform process or abortive pedicel. Style 3-cleft. Achenium white, shining, roughened with minute prominences. At the base are a number of longer warts, which are usually capitate, and are pointed downward. Perigynium consisting of six minute roundish white protuberances.

Monroe county (*Dr. Bradley*). In specimens collected in New-Hampshire by John Carey, Esq., the processes of the perigynium are closely approximated in pairs.

**** Hypoporum, Nees. *Achenium triangular at the base; the sides porous, punctate or sulcate. Perigynium none.*

5. Scleria verticillata, *Muhl.* *Dwarf Verticillate Nut-rush.*

Culm filiform, triquetrous, and, with the leaves, smooth; fascicles 4 – 6, alternate, sessile, rather distant, forming an interrupted spike; bracts minute, setaceous; achenium globose, rugose-verrucose, mucronate.—*Muhl. in Willd. sp.* 4. *p.* 317 (excl. syn.), *and gram. p.* 266 (excl. syn.); *Ell. sk.* 2. *p.* 561; *Kunth, enum.* 2. *p.* 353. Hypoporum verticillatum, *Nees in Linnæa*, 9. *p.* 303; *Torr. Cyp. p.* 384.

Culm 6 – 10 inches high. Leaves linear, very narrow, flat, shorter than the culm. Fascicles composed of 4 – 5 very few-flowered sessile spikelets, and appearing as if verticillate. Bracts about as long as the fascicles. Scales of the fertile flowers ovate, smooth, purple, with a strong upwardly scabrous green keel, which is produced into a short cusp. Nut a little more than half a line in diameter, strongly and somewhat rugosely papillose, conspicuously mucronate with the base of the style; the base 3-sided, without pores.

Swamps, Yates county (*Dr. Sartwell*).

TRIBE VIII. *CARICEÆ. Nees.*

Flowers diclinous. Scales of the spikes imbricated on all sides, one-flowered. Stamens 2 – 3. Stigmas 2 – 3. Achenium wholly enclosed in an utriculate perigynium, which is contracted and often 2-toothed or 2-lobed at the orifice.

14. CAREX. *Linn.; Endl. gen.* 957; *Torr. Cyp. p.* 386. *SEDGE.*

[Supposed to be from the Greek word *keiro*, to shear or cut; on account of its sharp leaves.]

Spikes one or several, androgynous, monœcious or rarely dicœcious. STAM. FL. Stamens 3, rarely 2 or 1. PIST. FL. Perigynium membranaceous or somewhat coriaceous, 2-toothed, emarginate or truncate at the apex, without an included bristle. Style single, included: stigmas 2 – 3, elongated, exserted. Achenium lenticular, plano-convex or triangular, crowned with the lower portion of the persistent and continuous or rarely articulated style.—Culms triangular, more or less leafy. Spikes terminal or axillary, distant or approximated, or variously aggregated.

This immense genus (containing, according to Dr. Boott, more than 550 species) is largely represented in the United States. Within the limits of the United States, there are probably at least 200 species.

A. *Spike single.*

* *Dicœious. Stigmas* 2.

1. CAREX DIOICA, *Linn.* *Dicœcious Sedge.*

Culm and leaves smooth; spike simple, dicœcious; perigynia somewhat erect or spreading, oblong-ovoid, nerved, hispid toward the summit on the margin.—*Linn. sp.* 2. *p.* 1379; *Schk. Car. t.* A. *f.* 1; *Engl. bot. t.* 543; *Richards. app. Frankl. nar. p.* 34; *Schwein. & Torr. Car. l. c.* 1. *p.* 293; *Kunth, enum.* 2. *p.* 368.

Rhizoma creeping. Culms 6 – 8 inches high, filiform, triangular, a little rough on the angles. Leaves setaceous, shorter than the culm. Sterile spikes about three fourths of an inch long; the scales ovate-lanceolate, rather obtuse, brown. Fertile spikes half an inch long, 8 – 12-flowered; the scales ovate. Perigynia somewhat erect or finally spreading almost horizontally, mostly straight or only slightly curved, obtusely triangular, with a short abrupt beak, longer than the scale; the orifice obliquely truncate. Achenium obovate-lenticular, grayish brown.

Swamps, Yates county (*Dr. Sartwell*). I have the same plant from Michigan, where it was collected by Mr. Bull. It agrees very well with my European specimens; but my valued friend Prof. Dewey thinks that it should rather be referred to *C. Davalliana.*

** *Spike androgynous.*

† *Stigmas 2.*

2. CAREX EXILIS, *Dewey.* *Slender Sedge.*

Spikes solitary, androgynous and staminate below or dioecious, densely flowered, simple; perigynia finally spreading or recurved, ovate-lanceolate, biconvex, serrulate on the margin, a little longer than the ovate acute scale. — *Dew. Car. l. c.* 14. *p.* 351. *f.* 53; *Torr. Cyp. p.* 387; *Kunth, enum.* 2. *p.* 419.

Culm 10 – 15 inches high, triangular, very slender, slightly rough on the angles above. Leaves setaceous, much shorter than the culm. Spike from half an inch to an inch long; the upper part usually fertile, with the fruit spreading; the lower part contracted and often elongated, consisting of closely imbricate staminate scales. Sometimes the whole spike is sterile; but the fertile is seldom or never without some staminate flowers at the base. Stigmas 2. Perigynium coriaceous, about 1½ line long, acute, 2-toothed at the apex.

Borders of mountain lakes, in Essex county; also on the borders of salt meadows, near Sagharbor, Long Island (*Dr. Knieskern*). *Fr.* June – July. A neat and well characterized species.

†† *Stigmas 3.*

3. CAREX PAUCIFLORA, *Lightf.* *Few-flowered Sedge.*

Spike simple, few-flowered; staminate flower mostly solitary; perigynium lanceolate-subulate, terete, reflexed; scales caducous. — *Lightf. fl. Scot.* 2. *p.* 543. *t.* 6. *f.* 2; *Schk. Car. t.* A. *f.* 4; *Schwein. & Torr. l. c. p.* 298; *Beck, bot. p.* 431; *Kunth, enum.* 2. *p.* 424. C. leucoglochin, *Linn. f. suppl. p.* 413; *Torr. Cyp. p.* 404; *Dew. Car. l. c.* 10. *p.* 42.

Culm triangular, 3 – 8 inches high, nearly smooth. Leaves mostly subradical, narrowly linear, somewhat convolute. Spike of about 4 fertile flowers. Sterile flower solitary, with a lanceolate scale. Perigynium large for the size of the plant, pale yellow, entire at the orifice, about twice the length of the oblong-lanceolate scale. Stigmas 3. Achenium oblong-cylindrical.

Sphagnous swamps, northern and western counties.

4. CAREX POLYTRICHOIDES, *Muhl.* *Bristle-stalked Sedge.*

Culm setaceous; spike simple, oblong-linear, few-flowered; perigynium oblong, alternate, obtusely triangular, somewhat emarginate, entire at the apex, twice as long as the ovate scale. —*Muhl. in Willd. sp.* 4. *p.* 213; *Schk. Car. t.* Iii. *f.* 138; *Pursh, fl.* 1. *p.* 29; *Muhl. gram. p.* 230; *Dew. Car. l. c.* 9. *p.* 258; *Schwein. & Torr. l. c. p.* 296; *Beck, bot. p.* 431; *Darlingt. fl. Cest. p.* 27; *Torr. Cyp. p.* 404; *Kunth, enum.* 2. *p.* 423. C. leptalea, *Wahl. act. Holm.* 1803. *p.* 139. C. microstachya, *Mich. fl.* 2. *p.* 169.

Culm 9 – 15 inches high, very slender, triquetrous. Leaves mostly subradical, setaceous, shorter than the culm. Spike sterile at the summit; the staminate flowers 4 – 7, with oblong rather acute scales. Fertile flowers 3 – 8. Scales acute or obtuse. Perigynium smooth, green, slightly nerved.

Low grounds, and in woods: abundant. *Fl.* May. *Fr.* June.

5. CAREX WILLDENOVII, *Schk.* *Willdenow's Sedge.*

Spike simple; sterile portion above, cylindrical, 6 – 12-flowered, the scales closely imbricated; fertile flowers 3 – 8; scales foliaceous, the lowest one with a subulate tip which is often longer than the spike; perigynium ovoid-oblong, acuminate-rostrate, the beak serrulate on the margin; stigmas pubescent; achenium oblong, triangular, finely striate.— *Schk. Car. t.* Mmm. *f.* 145; *Willd. sp.* 4. *p.* 211; *Muhl. gram. p.* 230; *Ell. sk.* 2. *p.* 527; *Dew. Car. l. c.* 11. *p.* 311; *Schw. & Torr. l. c.* 1. *p.* 295; *Beck, bot. p.* 431; *Kunth, enum.* 1. *p.* 480.

Culms (or rather peduncles) 3 – 10 inches high, slender, triquetrous. Leaves flat, 1 – 2 lines wide, overtopping the culm. Spikes usually 3 – 4 from each root, on nearly radical peduncles, about three quarters of an inch long; the sterile portion slender and rather acute, with obtuse scales which are whitish on the margin: fertile flowers usually 4 or 5. Style articulated at the base: stigmas 3. Perigynium membranaceous; the beak as long as the body and very slender, a little notched at the tip. Achenium pale straw-color, distinctly triangular, striate with dotted lines.

Moist shady places, Penn-Yan (*Dr. Sartwell*). *Fl.* May. *Fr.* June. I have received from T. G. Lea, Esq. of Cincinnati, a specimen of this plant in an anomalous state. On the principal culm or peduncle, the lowest flower of the spike is somewhat distant from the others, and from the orifice of its perigynium there protrudes a slender stalk. This supports a second and smaller androgynous spike, consisting of two fertile and three sterile flowers. A somewhat similar structure has been noticed in *C. phyllostachys* of C. A. Meyer (See *Torr. Cyp. p.* 404).

6. CAREX BACKII, *Boott.* *Back's Sedge.*

Spike simple; sterile flowers above, about 3, the fertile 2 – 4; fertile scales foliaceous, the lower ones much longer than the spike; stigmas smooth; perigynium globose-ovoid, acuminated with a conical smooth beak, entire at the point; achenium globose-pyriform, nearly smooth. — *Boott in Hook. fl. Bor.-Am.* 2. *p.* 210. *t.* 209. C. Willdenovii, *Gray, Gram. & Cyp. part* 2. *no.* 139 (in part).

Culms cespitose. Leaves grass-like, about 2 lines long, longer than the culms, rough on the margin. Culms (or rather peduncles) 3 – 4 from each shoot; the longest from 3 to 10 inches high; the others 1 – 3 inches, slender, triquetrous, rough on the angles. Spikes ripening at different times; the sterile portion at the summit, consisting of only two or three minute flowers, with obtuse clasping scales: fertile usually 3. Style articulated: stigmas rather thick and short, quite smooth. Perigynium rather more than two lines long, smooth, membranaceous, slightly margined, with 2 prominent ribs; the beak rather broad at the base. Achenium rounded at the summit, obscurely 3-sided, abruptly contracted at the base.

Watertown, Jefferson county (*Dr. Crawe*). Nearly allied to the preceding, but distinguished by its few sterile flowers, more globose perigynium, smooth beak, stigmas and achenium, as well as the broader and usually much longer foliaceous scales.

B. *Spikelets aggregated, androgynous, sessile. Stigmas* 2.

* *Spikelets sterile at the summit.*

7. CAREX DISPERMA, *Dew.* *Two-seeded Sedge.*

Spikelets mostly 3, rather remote, usually 2-flowered, the lowest one bracteate; perigynium ovate, rather obtuse, nerved, plano-convex, rough on the margin, entire at the point, twice as long as the ovate-carinate somewhat mucronate scale.—*Dew. Car. l. c.* 8. *p.* 266. *t.* A. *f.* 3; *Schwein. & Torr. l. c. p.* 303; *Beck, bot. p.* 432; *Kunth, enum.* 2. *p.* 405.

Culm 6 – 12 inches high, triquetrous, rough above, leafy below. Leaves narrow, mostly shorter than the culm. Spikes sometimes 2, rarely 4, mostly with only 2 fertile flowers. Bract of the lowest spikes often with a long slender point. Sterile scales lanceolate, whitish; the fertile broadly ovate, scarious, rather obtuse. Perigynium small, slightly narrowed above but scarcely acute, with a sharp rough margin, tumid in front, a little spreading.

Sphagnous swamps; frequent on mountains. *Fl.* June. *Fr.* July. Dr. Boott thinks this species is hardly distinct from *C. loliacea* of Europe.

8. CAREX CHORDORHIZA, *Ehrh.* *Long-rooted Sedge.*

Culm compressed-terete; spikelets in an ovoid head; perigynium ovate, acuminate, striate, slightly 2-toothed at the point, a little longer than the ovate acute scale. — "*Ehrh. phyt. no.* 77;" *Schk. Car. t.* Ii. *f.* 31; *Gray, Gram. & Cyp. part* 2. *no.* 143; *Torr. Cyp. p.* 388; *Kunth, enum.* 2. *p.* 369; *Boott in Hook. fl. Bor. Am.* 2. *p.* 211.

Rhizoma creeping and branching in sphagnum, throwing up slender culms which are 6 – 12 inches high. Leaves of the culm short, appressed; those of the sterile shoots much longer. Cluster or head of spikelets about three fourths of an inch long, with a short ovate-subulate bract at the base. Scales concave, appressed, brown. Perigynium plano-convex, very tumid in front, thick and somewhat spongy, smooth. Achenium obovate, compressed, obtuse, puncticulate, crowned with the rigid style.

Sphagnous swamps. Oneida county (*Dr. Gray* and *Dr. Knieskern*). *Fl.* May. *Fr.* June. A native also of the northern parts of Europe.

9. CAREX CEPHALOPHORA, *Muhl.* *Oval-headed Sedge.*

Culm triangular with convex sides, rough on the angles near the summit; spikelets aggregated in an oval head; perigynium ovate, compressed, acute, the margin rough towards the summit, about as long as the ovate mucronate or somewhat awned scale.—*Muhl. in Willd. sp.* 4. *p.* 220; *Schk. Car. t.* Hhh. *f.* 153; *Muhl. gram. p.* 118; *Ell. sk.* 2. *p.* 516; *Dew. Car. l. c.* 9. *p.* 269; *Schwein. & Torr. l. c. p.* 300; *Beck, bot. p.* 431; *Darlingt. fl. Cest. p.* 27; *Kunth, enum.* 2. *p.* 387.

Whole plant pale green. Culm usually 1 – 2 feet high, naked except towards the base, erect or reclining, rigid, striate. Spikelets collected into a dense head of a more or less elliptical or ovoid shape, with one or two slender subulate bracts at the base. Scales carinate,

rough on the margin, greenish. Style nearly as long as the fruit, somewhat bulbous and articulated at the base. Perigynium straight, diverging, ovate at the base, with a short acumination. Achenium orbicular-ovate, lenticular.

Hill-sides and banks of rivers : common. *Fl.* May. *Fr.* Early in June.

10. CAREX MUHLENBERGII, *Schk.* *Muhlenberg's Sedge.*

Spikelets 5 – 7, closely approximated, each with a setaceous bract at the base, which is usually longer than the spikelet ; perigynium broadly ovate, compressed, slightly nerved, somewhat diverging, 2-cleft at the point, rough on the margin, shorter than the ovate mucronate scale. — *Schk. Car.* 2. *p.* 12. *t.* Yyy. *f.* 178 ; *Willd. sp.* 4. *p.* 231 ; *Pursh, fl.* 1. *p.* 36 ; *Muhl. gram. p.* 221 ; *Ell. sk.* 2. *p.* 529 ; *Dew. Car. l. c.* 8. *p.* 265 ; *Schwein. & Torr. l. c. p.* 304 ; *Beck, bot. p.* 432 ; *Darlingt. fl. Cest. p.* 28 ; *Kunth, enum.* 2. *p.* 381.

Plant dark green. Culm 12 – 18 inches high, rather stout, triangular, striate, rough on the angles above. Leaves broadly linear. Compound spike about an inch long ; the setaceous bracts generally conspicuous, but sometimes short. Spikelets somewhat distinct. Scales with a short awn, which is a little longer than the perigynium. Perigynium plano-convex, ciliate-scabrous on the margin, flat on the back, slightly convex in front, with a short abrupt acumination, finally diverging ; the margin acute and serrulate about half way down. Achenium orbicular-obovate, lenticular, crowned with the very short style, which is somewhat bulbous and articulated at the base.

Rocky hill-sides, and on mountains : frequent. *Fl.* April. *Fr.* May – June. Resembles *C. cephalophora*, but the spikelets are less closely aggregated, and more bracteate ; the fruit also is broader and less pointed, the scales are longer, and the whole plant is dark green.

11. CAREX SICCATA, *Dew.* *Dry-spiked Sedge.*

Spikelets 4 – 8, elliptical, rather acute, approximated ; the highest androgynous, staminate at the summit ; intermediate ones staminate ; the lowest one (sometimes 2 or 3), usually fertile below and rather distant ; perigynia ovate-lanceolate, acuminate, appressed, rough on the margin, bifid, many-striate, about the length of the ovate-lanceolate scale. — *Dew. Car. l. c.* 10. *p.* 353. *t.* 1. *f.* 18, *and* 14. *p.* 278 ; *Torr. Cyp. p.* 391 ; *Beck, bot. p.* 435 ; *Kunth, enum.* 2. *p.* 377. C. pallida, *C. A. Mey. Cyp. nov. p.* 21. *t.* 8 (fide *Boott*) ; *Kunth, l. c. p.* 395.

Culm about a foot and a half high, slender, triquetrous, rough. Spikelets usually 6 or 7 ; the terminal one much larger than the others ; the sterile closely appressed to the rachis, and imbricated. Scales light brown, with a pale margin ; the lowest larger and bract-like. Perigynium convex externally, flat on the inside, membranaceous, tapering to a long point, distinctly scabrous on the margin. Achenium broadly ovate, lenticular, crowned with the somewhat articulated style, which is slightly hispid upward.

Western part of the State (*Dr. Sartwell*). Professor Dewey correctly remarks that this species resembles *C. intermedia* of Goodenough.

12. CAREX ROSEA, *Schk.* *Rose Sedge.*

Spikelets 4 – 6, remote, 9 – 12-flowered; bracts setaceous, the lower one exceeding the spike; fruit oblong, acuminate, rostrate, narrow at the base, radiate, rough on the distinct margin, about half the length of the broadly ovate rather obtuse scale.—*Schk. Car.* 2. *p.* 15. *t.* Zzz. *f.* 179; *Willd. sp.* 4. *p.* 237; *Pursh, fl.* 1. *p.* 36; *Muhl. gram. p.* 233; *Ell. sk.* 2. *p.* 531; *Schwein. & Torr. l. c. p.* 302; *Dew. Car. l. c.* 10. *p.* 276; *Beck, bot. p.* 432; *Darlingt. fl. Cest. p.* 28; *Kunth, enum.* 2. *p.* 386.

Culms usually about a foot or 18 inches high, slender and often decumbent, triquetrous or unequally 5-angled, naked except towards the base. Leaves very narrow, mostly about the length of the culm. Spikelets sometimes only 3, but usually about 5; the lower ones 6 – 10 lines asunder; the upper ones approximated, of a yellowish green color; the perigynia radiate when mature. Scales whitish, with a green midrib. Perigynia elliptical-ovate, plano-convex, acute at the base, tapering to a point, which is slightly 2-cleft. Achenium elliptical-lenticular, crowned with the short style, which is simple, and not articulated at the base.

Moist woods and low grounds. *Fl.* May. *Fr.* June – July. This species is sometimes dwarfish, with about 3 spikelets, which are 3 – 4-flowered; in which state it is the *C. rosea*, *β. radiata*, of Dewey.

13. CAREX RETROFLEXA, *Muhl.* *Retroflexed Sedge.*

Spikelets 3 – 6, somewhat approximated, 5 – 8-flowered, the lower ones bracteate; perigynia ovate, acuminate, 2-toothed at the summit, smooth on the margin, spreading or reflexed, about two-thirds the length of the ovate acute carinate scale.—*Muhl. in Willd. sp.* 4. *p.* 235; *Schk. Car. t.* Kkk. *f.* 140; *Pursh, fl.* 1. *p.* 35; *Muhl. gram. p.* 219; *Ell. sk.* 2. *p.* 529; *Dew. Car. l. c.* 7. *p.* 271, *and* 10. *p.* 277; *Schwein. & Torr. l. c. p.* 301; *Beck, bot. p.* 432; *Kunth, enum.* 2. *p.* 286. C. rosea, *var.* retroflexa, *Torr. Cyp. p.* 383.

Culm about a foot high, triangular, with the sides convex, slender, a little rough above. Leaves narrowly linear, pale green. Spikelets mostly 4; the two lower ones a little distant from the others, and commonly furnished with a setaceous bract, at first ovoid, but the flowers at length spreading or reflexed, yellowish when mature, sterile at the summit. Scales of the fertile flowers whitish, with a green keel. Perigynium smooth, with a short compressed point, which is smooth on the sides. Achenium ovate-lenticular. Style somewhat articulated.

Open woods and most meadows. *Fl.* May. *Fr.* June. Resembles the dwarf form of *C. rosea*, but differs in its more approximate spikelets, shorter and smooth fruit.

14. CAREX SPARGANIOIDES, *Muhl.* *Bur-reed Sedge.*

Spikelets 6 – 10, ovoid; the upper ones approximate; lower ones somewhat distant, bracteate; perigynia ovate, compressed, acute, diverging, rough on the narrowly winged margin, about twice as long as the ovate mucronate scale.—*Muhl. in Willd. sp.* 4. *p.* 237; *Schk. Car. t.* Lll. *f.* 142; *Pursh, fl.* 1. *p.* 36; *Muhl. gram. p.* 233; *Dew. Car. l. c.* 8. *p.* 265; *Ell.*

sk. 2. *p.* 531 ; *Bigel. fl. Bost. p.* 336 ; *Schwein. & Torr. l. c. p.* 304 ; *Beck, bot. p.* 432 ; *Darlingt. fl. Cest. p.* 29 ; *Kunth, enum.* 2. *p.* 381.

Culm 2 feet or more in height, triquetrous, rough on the angles above. Leaves pale green, broadly linear. Spikelets sometimes as many as 12, but usually about 8 : several of the lowest from half an inch to an inch apart, and sometimes compound. Bracts lanceolate, often longer than the spikelets. Scales yellowish green. Perigynium membranaceous, much compressed, plano-convex, spreading horizontally or a little reflexed, obscurely nerved, yellowish when mature. Achenium broadly ovate-lenticular, crowned with the short continuous style.

Low swampy grounds : not rare. *Fl.* Early in May. *Fr.* June.

15. CAREX STIPATA, *Muhl.* *Awl-fruited Sedge.*

Spikelets numerous, bracteate, crowded into an oblong compound spike ; bracts subulate, rough, mostly shorter than the spikelets ; perigynia lanceolate, with a long tapering beak which is serrulate on the margin, nerved, spreading, nearly twice as long as the ovate-lanceolate mucronate scale. — *Muhl. in Willd. sp.* 4. *p.* 233 ; *Schk. Car. t.* Hhh. *f.* 132 ; *Pursh, fl.* 1. *p.* 35 ; *Muhl. gram. p.* 220 ; *Dew. Car. l. c.* 7. *p.* 271 ; *Ell. sk.* 2. *p.* 529 ; *Schwein. & Torr. l. c. p.* 304 ; *Beck, bot. p.* 432 ; *Darlingt. fl. Cest. p.* 28 ; *Kunth, enum.* 2. *p.* 382. C. vulpinoidea, *Torr. Cyp. p.* 390 ; *Boott in Hook. fl. Bor.-Am.* 2. *p.* 212, not of *Michx.*

Culm 1 – 3 feet high, rather thick and succulent, triquetrous, smooth except on the upper part. Leaves 2 – 4 lines long, smooth, pale green. Spike about 2 inches long, of a straw color, composed of 10 – 15 oblong spikelets which are somewhat distinct ; the lower ones with subulate bracts at the base. Scales tapering to a sharp point. Perigynia plano-convex, slightly stipitate with a broad truncate corky base, tapering to a long slender beak, 2-cleft at the point, conspicuously striate. Achenium broadly ovate-lenticular. Style distinctly articulate at the base.

Swamps and low grounds : very common. *Fl.* April. *Fr.* June.

16. CAREX VULPINOIDEA, *Michx.* *Fox Sedge.*

Spike oblong, decompound, more or less interrupted, bracteate ; spikelets glomerate, ovoid, obtuse ; perigynia compressed, ovate, acuminate, bifid at the point, 3-nerved, sparingly hispid on the margin of the beak, finally diverging, rather shorter than the ovate cuspidate scale.— *Michx. fl.* 2. *p.* 69. C. multiflora, *Muhl. in Willd. sp.* 4. *p.* 243 ; *Schk. Car. t.* Lll. *f.* 144 ; *Pursh, fl.* 1. *p.* 36 ; *Muhl. gram. p.* 222 ; *Dew. Car. l. c.* 9. *p.* 60 ; *Ell. sk.* 2. *p.* 530 ; *Schwein. & Torr. l. c. p.* 306 ; *Beck, bot. p.* 433 ; *Darlingt. fl. Cest. p.* 29 ; *Kunth, enum.* 2. *p.* 387.

Culm 1½ – 2 feet high, acutely triangular and rough on the angles above, nearly terete below, leafy. Spike 1½ – 2½ inches long, formed of numerous small spikelets, which are crowded into 8 – 10 clusters. Bracts rather foliaceous, often elongated. Scales of the sterile flowers lanceolate, with a short point ; of the fertile ovate, with a rough mucro. Perigynia

diverging almost horizontally, distinctly 3-nerved on the convex side, 2-nerved on the flat side, yellowish green when mature. Achenium broadly ovate-lenticular, crowned with the somewhat articulated style.

Low grounds : common. *Fl.* May. *Fr.* June.

17. Carex setacea, *Dew.* *Bristly-spiked Sedge.*

Spike oblong, decompound, bracteate ; spikelets glomerate, ovoid, obtuse ; perigynia ovate-lanceolate, acuminate, compressed, bifid at the point, somewhat diverging, strongly serrulate-hispid on the margin, about the length of the ovate-lanceolate awned scale. — *Dew. Car. l. c.* 9. *p.* 61. *t.* 2. *f.* 5 ; *Schwein. & Torr. l. c. p.* 307 ; *Kunth, enum.* 2. *p.* 382.

Culm 1½ – 2 feet high, triquetrous with the sides striate, very rough on the angles above, leafy. Leaves 2 – 3 lines wide. Spike about 2 inches long, sometimes dicœcious, appearing bristly from the numerous bracts. Spikelets very numerous, aggregated into several approximated clusters, tawny when old. Scales light brown, green on the keel ; the bristle-like tip extending to the apex of the fruit. Perigynium plano-convex, obscurely 3 – 5-nerved, yellowish when mature. Achenium ovate, lenticular. Style somewhat articulated.

Wet meadows, in the western part of the State. *Fl.* June. *Fr.* July. Very near the preceding species, but differs in the more compact spike ; the perigynia also are narrower, more compressed, less diverging, and the margin more strongly serrulate.

18. Carex bromoides, *Schk.* *Bromus-like Sedge.*

Spikes 4 – 6, alternate, oblong-lanceolate, erect, the uppermost one fertile at the summit, the others either wholly pistillate or androgynous, with staminate and fertile flowers both at the base and apex ; fruit lanceolate, nerved, erect, acuminate, rough on the margin, longer than the lanceolate scale. — *Schk. Car.* 2. *p.* 8. *t.* Xxx. *f.* 176 ; *Pursh, fl.* 1. *p.* 135 ; *Muhl. gram. p.* 217 ; *Ell. sk.* 2. *p.* 528 ; *Dew. Car. l. c.* 8. *p.* 264 ; *Schwein. & Torr. l. c. p.* 300 ; *Beck, bot. p.* 431 ; *Darlingt. fl. Cest. p.* 31 ; *Kunth, enum.* 2. *p.* 377.

Culm 1 – 2 feet high, slender, triquetrous, rough on the angles above. Spikelets 4 – 6 lines long, sometimes only 3, but usually 4 ; the lower ones rather distant ; the uppermost one mostly with a very few staminate flowers below, or occasionally with 1 or 2 at the summit ; the others varying, either wholly fertile, or with a few sterile flowers above or below. Occasionally the plant is somewhat dicœcious or polygamous ; some individuals being entirely sterile, while others are fertile. Scales broadly lanceolate, light brown, with an abrupt mucronate point. Fruit conspicuously striate ; the lower third solid and corky ; the point slightly bifid. Achenium ovate-oblong, obtuse, crowned with the articulated style.

Wet meadows and swamps. *Fl.* May. *Fr.* June.

19. CAREX ALOPECOIDEA, *Tuckerm.* *Fox-tail Sedge.*

Spike compound, oblong; spikelets 8 – 10, ovoid, aggregated, staminate above; perigynium ovate, plano-convex, nearly nerveless, about as long as the ovate mucronate scale; the beak of medium length, acuminate, serrulate-scabrous on the margin, bifid at the tip.—*Tuckerm. enum. Car. p.* 18, *and Sill. jour.* 45. *p.* 39. C. cephalophora, *var.* maxima, *Dew. Car. l. c.* 43. *p.* 92.

Culm tall (2 – 4 feet high), triquetrous, rough on the angles, leafy below. Spike about an inch long, loose, yellowish green. Stigmas 2. Fruit diverging, slightly winged.

Woods, Penn-Yan (*Dr. Sartwell*). Resembles *C. cephalophora*, but differs in the perigynium. It is also allied to *C. vulpina* of Europe, and *C. stipata*; but in those species the perigynium is scarcely margined.

20. CAREX SARTWELLII, *Dew.* *Sartwell's Sedge.*

Spike compound; spikelets 12 – 25, ovoid and ovoid-oblong, sessile, somewhat closely bracteate, fertile below, the upper ones often almost wholly staminate, and the lower ones, or sometimes all of them, chiefly fertile; perigynium ovate-lanceolate, convexo-concave, somewhat 2-toothed at the apex, about the length of the ovate acute scale. — *Dew. Car. l. c.* 43. *p.* 91.

Culm 1½ – 2 feet high, rather rigid, erect, leafy below, rough on the angles. Leaves flat, pale green, shorter than the culm. Spike about 2 inches long, lobed, somewhat compressed. Spikelets very closely approximated: one third or one half of the upper ones commonly sterile; the lower ones with a few staminate flowers above, or entirely fertile. Scales light brown. Perigynium with the margin serrulate-scabrous. Achenium obovate-lenticular, slightly two-toothed, and often split down in front half its length.

Junius, Seneca county (*Dr. Sartwell*). As my acute friend Mr. Tuckerman remarks, this species is scarcely distinct from the European *C. disticha.*

21. CAREX TERETIUSCULA, *Good.* *Lesser-panicled Sedge.*

Spike decompound, oblong, consisting of ovate crowded spikelets which are finally brownish; bracts short; perigynia ovate, stipitate, acuminate, unequally biconvex, 3 – 5-nerved externally, the flat beak serrulate on the margin, longer than the ovate acute scales.—*Gooden. in Linn. trans.* 2. *p.* 163. *t.* 19. *f.* 3; *Schk. Car. t.* D. *f.* 19, *and* T. *f.* 69; *Dew. Car. l. c.* 7. *p.* 225; *Schwein. & Torr. l. c. p.* 308; *Beck, bot. p.* 433; *Kunth, enum.* 2. *p.* 390. C. paniculata, *β.* teretiuscula, *Wahl. in act. Holm.* 1803. *p.* 143; *Torr. Cyp. p.* 390.

Culm 1½ – 2 feet or more high, triquetrous and striate, rigid, rough on the angles. Leaves very narrow, channelled, triquetrous towards the apex. Spike 1 – 1½ inch long and one third of an inch in diameter, often somewhat decompound. Scales brownish, with a pale green keel. Perigynium chestnut-brown, shining, nerved on the convex surface but not on the back, thickened and corky at the base, with a short abrupt stipe. Achenium orbicular-obovate, lenticular.

Swamps: common. *Fl.* May. *Fr.* June. A native also of Europe.

22. CAREX DECOMPOSITA, *Muhl.* (Plate CXLII.) *Large-panicled Sedge.*

Spike decompound and paniculate; spikelets very numerous and crowded, finally brown; perigynium broadly ovate, sessile, with a short abrupt beak which is rough on the margin, 5 – 9-nerved on each side, about the length of the ovate acuminate scale. — *Muhl. gram. p.* 264; *Dew. Car. l. c.* 25. *p.* 140. *t.* S. *f.* 58; *Kunth, enum.* 2. *p.* 390. C. paniculata, *var.* decomposita, *Dew. l. c.* 10. *p.* 276; *Torr. Cyp. p.* 390.

Plant pale green. Culm 2 – 3 feet high, obtusely triangular, striate, slightly rough on the angles, leafy. Leaves broadly linear, rough. Spike or panicle 2 – 4 inches long, more or less bracteate below; the branches alternate and nearly erect: spikelets ovoid, androgynous, with the sterile flowers at the summit. Perigynium almost orbicular-ovate, convex on both surfaces and distinctly nerved, particularly toward the base, very narrowly margined, of a dark brown color when mature, the texture thick and corky: beak broad at the base and abruptly pointed, slightly notched at the point. Style continuous. Achenium ovate, lenticular.

Swamps. Yates county (*Dr. Sartwell*). This species resembles *C. paniculata* of Europe; but in that species the perigynium is narrower, with a much longer and more deeply bifid beak.

** *Spikelets staminate at the base.*

23. CAREX TRISPERMA, *Dew.* *Three-seeded Sedge.*

Spikelets mostly 3, about 3-flowered, remote, alternate, sessile, ovate, the two lower ones with long setaceous bracts; perigynia oblong, acute or tapering to a short beak, somewhat diverging, plano-convex, entire at the apex, finely nerved, nearly smooth on the margin, longer than the oblong acute whitish scale. — *Dew. Car. l. c.* 9. *p.* 63. *t.* C. *f.* 12; *Schwein. & Torr. Cyp. l. c. p.* 311; *Beck, bot. p.* 434; *Kunth, enum.* 2. *p.* 406.

Culm 1 – 2 feet high, triangular, rough on the angles, very slender and weak, often prostrate, leafy. Leaves very narrow. Spikelets sterile below, 2 – 4-flowered; the bracts of the lower ones 2 – 3 inches long, linear-setaceous. Scales very thin and membranaceous; all but the green midrib of a whitish color. Perigynium membranaceous, marked with numerous slender nerves, green, about one third longer than the scale. Achenium obovate-oblong, compressed. Style continuous.

Sphagnous swamps, and wet mountain woods. *Fl.* June. *Fr.* July.

24. CAREX DEWEYANA, *Schwein.* *Dewey's Sedge.*

Spikelets about 3, sessile, ovoid, rather distant, the uppermost one without a bract; achenium oblong-lanceolate, acuminate-rostrate, 2-toothed at the summit, a little rough on the margin, rather longer than the oblong-lanceolate mucronate or slightly awned hyaline scale.— *Schwein. anal. tab. in ann. lyc. N. York,* 1. *p.* 65; *Dew. Car. l. c.* 9. *p.* 62. *t.* C. *f.* 11; *Schwein. & Torr. Car. l. c. p.* 110; *Beck, bot. p.* 433; *Kunth, enum.* 2. *p.* 419.

Culm 1 – 3 feet high, triquetrous, weak and often somewhat decumbent, rough on the angles above. Leaves pale yellowish green, mostly radical, 1 – 2 lines wide. Spikelets mostly 3, but sometimes 4 or only 2, sterile below ; the two lower ones with a setaceous bract at the base. Perigynium membranaceous, erect or a little spreading, plano-convex, pale, distinctly rough on the margin ; the convex surface smooth and obscurely nerved. Scales whitish and translucent, with a rough point or short bristle. Achenium ovate, lenticular.

Moist woods : common in the western parts of the State. *Fl.* Early in June.

25. CAREX CANESCENS, *Linn.* *White Carex.*

Spikelets about 6, rather distant, elliptical (pale), with minute bracts at the base ; perigynium broadly ovate, flatly plano-convex, obscurely striate, rather acute, slightly rough on the margin, nearly entire at the orifice, about the length of the scale.— *Linn. sp.* 2. *p.* 974 ; *Schk. Car. t.* C. *f.* 13 ; *Wahl. act. Holm.* 1803. *p.* 147 ; *Torr. Cyp. p.* 393. C. curta, *Good. in Linn. trans.* 2. *p.* 145 ; *Muhl. gram. p.* 232 ; *Dew. l. c.* 8. *p.* 83 ; *Schwein. & Torr. Car. l. c. p.* 318 ; *Beck, bot. p.* 435 ; *Kunth, enum.* 2. *p.* 403. C. Richardi, *Michx. fl.* 2. *p.* 170.

var. *sphærostachya :* spikelets 3 – 4, roundish, few-flowered : perigynium narrower, acuminated with a conspicuous beak. *Tuckerm. in Sill. jour.* 45. *p.* 39. C. canescens, *β.*, *Torr. l. c.*

Culms 15 – 24 inches high, clustered, triquetrous, rough above, striate. Leaves broadly linear, pale green. Spikelets 4 – 8, nearly one third of an inch long, alternate ; the lower ones from 3 lines to nearly an inch apart, staminate below ; the bracts at the base short, with a very slender setaceous point. Scales ovate, whitish and hyaline, acute with a mucronate tip, mostly about the length of the perigynium, but sometimes a little longer. Perigynium somewhat corky below, marked with 6 - 8 faint nerves on both sides ; the orifice very slightly 2-toothed. Achenium obovate, lenticular, crowned with the articulated style.

Wet meadows : frequent ; var. *sphærostachya*, Penn-Yan (*Dr. Sartwell*). *Fl.* May. *Fr.* June. According to Dr. Boott, Linnæus confounded this species with *C. Buxbaumii* and *C. alpina ;* and the description of *C. canescens* in the *Sp. pl.* having been drawn chiefly from *C. Buxbaumii*, he considers that the proper *C. canescens.* The silvery white color of the mature spikelets is a good distinguishing mark of this CAREX.

26. CAREX STELLULATA, *Good.* *Little Prickly Sedge.*

Spikelets 3 – 4, roundish or ovoid, rather approximated ; perigynia ovate, acuminate, ciliate-scabrous on the margin, 2-toothed at the summit, at length spreading horizontally, a little longer than the ovate rather obtuse scale. — *Good. in Linn. trans.* 2. *p.* 1114 ; *Schk. Car. t.* C. *f.* 14 ; *Dew. Car. l. c.* 11. *p.* 306 ; *Schwein. & Torr. Car. l. c. p.* 317 ; *Beck, bot. p.* 435 ; *Torr. Cyp. p.* 392 ; *Kunth, enum.* 2. *p.* 399.

var. *sterilis :* inflorescence more or less diœcious ; the pistillate spikes bearing very few

staminate flowers ; the staminate spikes more or less pistilliferous. *Torr. Cyp. l. c.* C. sterilis, *Schk. Car. t.* Mmm. *f.* 146 ; *Willd. sp.* 4. *p.* 208 ; *Muhl. gram. p.* 217 ; *Dew. Car. l. c.* 11. *p.* 304 ; *Schwein. & Torr. Car. l. c. p.* 293 ; *Kunth, l. c. p.* 401.

var. *scirpoides* : somewhat smaller ; spikes (especially the uppermost) with numerous staminate flowers, thus becoming clavate. *Torr. l. c.* C. scirpoides, *Schk. Car. t.* Zzz. *f.* 180 ; *Willd. sp.* 4. *p.* 237 ; *Muhl. gram. p.* 225 ; *Ell. sk.* 2. *p.* 533 ; *Dew. Car. l. c.* 8. *p.* 96 ; *Schwein. & Torr. Car. l. c. p.* 317.

Culm usually about a span high, but often a foot or more, triangular with the sides convex. Leaves about a line wide, pale green. Spikelets rarely 5, mostly 4, few-flowered, yellowish green when mature ; the lower one or two a little distant. Scales light brown. Perigynium broad at the base, tapering above to a longish beak, convex externally, and marked with 7 – 9 pretty distinct nerves. Achenium roundish ovate.

Wet meadows : common. *Fl.* in the beginning, and *fr.* about the end of May. A somewhat variable species, but easily recognized. I cannot distinguish, by any constant and specific marks, *C. scirpoides* and *C. sterilis* from the proper *C. stellulata.*

27. CAREX TENUIFLORA, *Wahl.* *Slender Cluster-spiked Sedge.*

Spikelets 3, roundish-elliptical, approximated, the lowest one bracteate at the base ; perigynium elliptical, obtuse, compressed, erect, about the length of the broadly ovate rather obtuse scale.—*Wahl. in act. Holm.* 1803. *p.* 147 ; *Schk. Car. t.* Eeee. *f.* 187 ; *Dew. Car. l. c.* 28. *p.* 273, *and* 39. *p.* 51 ; *Torr. Cyp. p.* 392 & 443 ; *Kunth, enum.* 2. *p.* 405.

Culms cespitose, 8 – 12 inches long, very slender and often prostrate, triquetrous, nearly smooth. Leaves narrowly linear, shorter than the culm. Spikelets closely approximated. Scales hyaline, with a green keel. Perigynium smooth, obscurely striate, nearly entire at the orifice. Achenium obovate, lenticular, crowned with the continuous persistent style.

Sphagnous swamps : Oriskany, Oneida county (*Dr. Knieskern*) ; near Ogdensburgh (*Dr. Crawe*). *Fl.* June. *Fr.* July. This rare species is a native also of the north of Europe.

28. CAREX SCOPARIA, *Schk.* *Broom-like Sedge.*

Spikelets 5 – 10, elliptical or ovoid, acute, approximated, the lowest with a deciduous setaceous bract at the base ; perigynia lanceolate, nerved, with a rough narrowly winged margin, bifid, longer than the lanceolate acuminate scale.—*Schk. Car. t.* Xxx. *f.* 175 ; *Willd. sp.* 4. *p.* 230 ; *Muhl. gram. p.* 277 ; *Ell. sk.* 2. *p.* 535 ; *Dew. Car. l. c.* 8. *p.* 94 ; *Schw. & Torr. Car. l. c. p.* 313 ; *Beck, bot. p.* 434 ; *Darlingt. fl. Cest. p.* 30 ; *Kunth, enum.* 2. *p.* 396 ; *Tuckerm. enum. Car. p.* 17 (excl. var. γ.). C. leporina, *Michx. fl.* 2. *p.* 170.

var. *lagopodiodes* : spikes 10 - 15, crowded, the lowest usually subtended by a long bract. *Torr. l. c. ; Tuckerm. enum. Car. p.* 17. C. lagopodiodes, *Schk. Car. t.* Yyy. *f.* 177 ; *Willd. l. c. ; Muhl. gram. l. c. ; Ell. l. c. ; Dew. l. c. p.* 95 ; *Schwein. & Torr. l. c. p.* 313 ; *Beck, bot. p.* 434 ; *Darlingt. l. c. ; Kunth, l. c. p.* 398 (excl. syn. *C. cristatæ*).

Culm 1 – 2 feet high, triquetrous, rough above. Leaves about 2½ lines wide, nearly as long as the culm. Spikelets 4 – 6 lines long, closely approximated in an imbricated oblong cluster, many-flowered; each with a very few staminate flowers at the base. Scales a little shorter than the perigynium, light brown. Perigynium flatly plano-convex, many-nerved on both sides, tapering to a long very acute point; the margin distinctly winged, and ciliolate-scabrous. Achenium elliptical-oblong, crowned with the long continuous style.

Wet meadows and swamps: very common, as is the variety *lagopodioides*. The latter has been regarded as a distinct species by most of our botanists, but it seems clearly to pass into the ordinary form.

29. CAREX STRAMINEA, *Schk.* *Straw-colored Sedge.*

Spikelets 3 – 8, roundish ovoid, approximated; fruit broadly ovate, much compressed, abruptly acuminate, with a broadly winged ciliolate-scabrous margin, a little longer than the lanceolate scale. — *Schk. Car. t.* C. *f.* 34, *and t.* Xxx. *f.* 174; *Willd. sp.* 4. *p.* 242; *Muhl. gram. p.* 229; *Dew. Car. l. c.* 7. *p.* 276, *and* 11. *p.* 157; *Schwein. & Torr. Car. l. c. p.* 314; *Beck, bot. p.* 434; *Darlingt. fl. Cest. p.* 30; *Torr. Cyp. p.* 395; *Kunth, enum.* 2. *p.* 398.

var. *fœnea:* spikelets 4 – 10, ovoid or ovoid-globose, of a glaucous green color, the lower ones sometimes compound; perigynium rather broadly winged, erect.—*Torr. l. c.; Tuckerm. l. c.* C. fœnea, *Muhl. gram. p.* 227; *Schwein. & Torr. l. c.; Kunth, l. c. p.* 397?

var. *moniliformis:* spikelets 4 – 12, straw-colored, ovoid or obovoid, rather remote; perigynia ovate, more or less conspicuously beaked, erect. — *Tuckerm. l. c.* C. festucacea (in part), *Dew. l. c.; Schwein. & Torr. l. c.* C. tenera, *Dew. Car. l. c.* 8. *p.* 97; *Schwein. & Torr. Car. l. c. p.* 319; *Beck, bot. p.* 435. C. adusta, *Boott in Hook. fl. Bor-Am.* 2. *p.* 215 (fide *Tuckerm.*).

var. *festucacea:* spikelets 4 – 12, green, obovoid, more or less clavate, somewhat approximate; perigynia with a less conspicuous beak, erect.—*Tuckerm. l. c.* C. festucacea, *Schk. Car. t.* Www. *f.* 173; *Dew. l. c.* (in part); *Schwein. & Torr. l. c.* (in part).

var. *mirabilis:* spikelets 8 – 12, green, roundish-ovoid, closely aggregated; perigynia ovate, a little smaller and narrower, finally spreading. — *Tuckerm. l. c.* C. mirabilis, *Dew. l. c.* 3. *p.* 63.

var. *cristata:* spikelets 8 – 15, finally straw-colored, closely aggregated in a kind of head; perigynia ovate, finally spreading. — *Tuckerm. l. c.* C. cristata, *Schwein. anal. tab. l. c.; Schwein. & Torr. l. c. p.* 315. *t.* 25. *f.* 1; *Dew. Car. l. c.* 10. *p.* 44.

A variable species, but the numerous forms pass into each other. Perigynium many-nerved, 2-toothed at the apex. Achenium obovoid or oblong-obovoid, lenticular, crowned with the continuous style.

Wet meadows and swamps: var. *fœnea* in salt-marshes on the seacoast. *Fl.* May – June. *Fr.* June – July.

C. *Spikes several (rarely solitary), all of them androgynous. Stigmas* 3.

* *Staminate at the summit.*

30. CAREX PEDUNCULATA, *Muhl.* *Long-stalked Sedge.*

Spikes about 4, on long peduncles, very remote, staminate above, erect; perigynia obovate-triquetrous, entire, about the length of the cuspidate scale. — *Muhl. in Willd. sp.* 4. *p.* 222; *Schk. Car. t.* Ggg. *f.* 131; *Muhl. gram. p.* 232; *Dew. Car. l. c.* 9. *p.* 259; *Schwein. & Torr. Car. l. c. p.* 309; *Kunth, enum.* 2. *p.* 48.

Culms cespitose, 4 – 8 inches high, slender, triquetrous, rough downward. Leaves pale green, 1½ line wide, rather rigid, with a triangular point. Spikes usually 4 on one culm, few-flowered; the lower ones nearly radical; all of them on slender peduncles: uppermost with a larger sterile portion than the others. Sterile scales often dark brown, ovate-lanceolate, rigidly cuspidate. Fertile scales broader, and with a longer cusp. Perigynium with a long attenuated base, smooth, membranaceous, nerveless, entire and somewhat recurved at the orifice. Achenium triquetrous. Style continuous.

Sides of rocky hills, and in dry woods: rare. *Fl.* April. *Fr.* May.

** *Staminate at the base.*

31. CAREX SQUARROSA, *Linn.* *Squarrose-headed Sedge.*

Spikes 1 – 3, oblong or cylindrical-oblong, very thick; perigynia inflated, with a long straight beak, numerous, horizontal, squarrose, smooth, 2-toothed at the summit, longer than the lanceolate glume.—*Linn. sp.* 2. *p.* 973; *Willd. sp.* 4. *p.* 215; *Dew. Car. l. c.* 8. *p.* 270. *t.* J. *f.* 29; *Schwein. & Torr. Cyp. l. c. p.* 299. *t.* 27. *f.* 2; *Beck, bot. p.* 431; *Darlingt. fl. Cest. p.* 27; *Kunth, enum.* 2. *p.* 428. C. typhina, *Michx. fl.* 2. *p.* 169.

Culm 1½ – 2 feet high, triquetrous, leafy, rough. Leaves about 2½ lines wide, longer than the culm. Spikes commonly solitary, but often 2 or 3, very rarely more, 1 – 2 inches long and nearly three fourths of an inch in diameter, obtuse at each end. Sterile flowers at the base, closely imbricated, and giving the upper part of the peduncle a clavate appearance. Scales lanceolate, acute; the fertile ones almost concealed by the crowded flowers. Perigynia turbinate and inflated below, with several strong nerves; the upper ones nearly erect, middle ones horizontal, and the lowest somewhat reflexed; the long slender abrupt beaks giving the spike a squarrose appearance. Achenium oblong, triangular, puncticulate-striate, crowned with the long stout continuous style, which is often recurved within the perigynium.

Bog meadows: frequent about New-York, but rare in the interior of the State. *Fl.* May. *Fr.* June. A remarkable species, which is recognized at once by its large thick squarrose spikes.

D. *Spikes several : terminal one androgynous ; the others fertile. Stigmas* 3.

32. CAREX BUXBAUMII, *Wahl.* *Buxbaum's Sedge.*

Spikes about 4, obovate or oblong, rather remote ; terminal one androgynous, sterile below, pedunculate , the others nearly sessile ; perigynium elliptical, compressed-triangular, obtuse, minutely 2-toothed, about as long as the ovate cuspidate (brown) scale.—*Wahl. in act. Holm.* 1803. *p.* 163 ; *Muhl. gram. p.* 325 ; *Ell. sk.* 2. *p.* 539 ; *Schwein. & Torr. Car. l. c. p.* 323 ; *Dew. Car. l. c.* 10. *p.* 39 ; *Beck, bot. p.* 436 ; *Kunth, enum.* 2. *p.* 432. C. polygama, *Schk. Car. t.* X. & Gg. *f.* 76. C. canescens, *Boott in Hook. Brit. fl.* (ed. 4.) *p.* 335, *and in Hook. fl. Bor.-Am.* 2. *p.* 216 ; *Linn. sp.* 2. *p.* 974 (in part).

Culm about 2 feet high, triquetrous, nearly smooth, leafy below. Leaves shorter than the culm. Spikes 3 or sometimes 5, half an inch or more in length ; the upper ones rather approximated ; the lowest distant, and subtended by a long foliaceous bract. Sometimes the uppermost spike is entirely sterile. Scales of a bright chestnut-brown, with a pale midrib. Perigynium mostly a little shorter than the scale, nerveless ; the orifice furnished with two minute but distinct teeth. Achenium triquetrous, oblong, crowned with the continuous style.

Sphagnous swamps ; northern and western counties : rare. *Fl.* May. *Fr.* June. Our plant is in all respects the same as the European *C. Buxbaumii.*

33. CAREX TRICEPS, *Michx.* *Three-headed Pubescent Sedge.*

Spikes mostly 3, oblong , terminal one pedunculate , the others fertile, sessile and rather distant ; perigynium broadly obovate, very obtuse, entire at the orifice, strongly nerved, pubescent when young, but finally almost smooth, shorter than the oblong acute scale ; sheaths and leaves pubescent.—*Michx. fl.* 2. *p.* 170 ; *Ell. sk.* 2. *p.* 538 ? ; *Torr. cat. in geol. surv. p.* 186 ; *Kunth, enum.* 2. *p.* 430. C. hirsuta, *Willd. sp.* 4. *p.* 252 ; *Schk. Car. t.* Www. *f.* 172 ; *Schwein. & Torr. Car. l. c. p.* 322 ; *Beck, bot. p.* 436 ; *Darlingt. fl. Cest. p.* 32. C. viridula, *Schwein. & Torr. l. c.* (excl. syn. *Michx.*).

var. *pedunculata :* spikelets oblong-cylindrical, pedunculate ; leaves scarcely pubescent.—C. hirsuta, *var.* pedunculata, *Schwein. & Torr. l. c.*

Culm 12 – 18 inches high, triquetrous, rough, leafy. Leaves narrowly linear, rough on the margin, more or less pubescent, as are also the sheaths. Spikes sometimes 4 or only 2, 6 – 8 lines long and about $2\frac{1}{2}$ lines in diameter ; the terminal one clothed at the base with sterile lanceolate scales ; the others on very short peduncles : lowest one with a leafy bract at the base. Perigynium marked on each side with 7 – 9 nerves, a little pubescent when young, but nearly or quite smooth when mature, yellowish green. Achenium triquetrous-obovoid, puncticulate-striate.

Woods and meadows. *Fl.* May. *Fr.* End of June or beginning of July.

34. CAREX VIRESCENS, *Muhl.* *Green-spiked Pubescent Sedge.*

Spikes mostly 3, oblong or oblong-cylindrical, approximated, erect, all on short peduncles, terminal one staminate at the base, the others fertile, with subulate or foliaceous bracts at the base; perigynium triangular-ovoid, obtuse, strongly nerved, roughly pubescent, rather longer than the ovate mucronate scale; leaves and sheaths pubescent. — *Muhl. in Willd. sp. 4. p. 251; Schk. Car. t.* Mmm. *f.* 147; *Muhl. gram. p.* 233; *Dew. Car. l. c.* 9. *p.* 259; *Schwein. & Torr. Car. l. c. p.* 321 (and *var.* costata); *Beck, bot. p.* 436; *Darlingt. fl. Cest. p.* 32; *Kunth, enum.* 2. *p.* 429. C. costata, *Schwein. an. tab. l. c. p.* 67.

Culm 1 – 2 feet high, slender, erect or reclining, leafy, triquetrous, rough above. Leaves about 2 lines wide, pale green. Spikes sometimes 4 or only 2, half an inch to three fourths of an inch long; the terminal one with a few staminate flowers at the base. Fertile scales whitish, with a green keel. Perigynium green, flattened on the inside, tumid and obtusely angular in front, marked with several strong nerves or ribs, roughly pubescent, nearly entire at the orifice. Achenium obovate-triquetrous, crowned with the continuous style.

Woods and hill-sides. *Fl.* May. *Fr.* June. *C. costata*, Schwein., is only a luxuriant state of this species, and can hardly be considered as even a variety.

35. CAREX GRACILLIMA, *Schwein.* *Slender Nodding Sedge.*

Spikes usually 4, linear, slender, rather loosely flowered, distant, on filiform nodding peduncles, the uppermost one androgynous, staminate below, the others all fertile; perigynium oblong, triangular, obtuse, smooth, entire, longer than the oblong mucronate scale.— *Schwein. an. tab. l. c. p.* 66; *Dew. Car. l. c.* 8. *p.* 98. *t.* J. *f.* 28; *Darlingt. fl. Cest. p.* 33; *Kunth, enum.* 2. *p.* 454. C. digitalis, *Schwein. & Torr. Car. l. c. p.* 324. *t.* 27. *f.* 1 (not of *Willd.*); *Beck, bot. p.* 436.

Culm 12 – 18 inches high, triquetrous, nearly smooth, leafy. Leaves about 2 lines long. Spikes 1 – 1½ inch long; the lowest one with a leafy bract at the base of the peduncle; the two next with subulate bracts: terminal one about one half staminate. Sterile scales linear-lanceolate, scarcely mucronate: fertile scales about one half the length of the perigynia, whitish, with a green keel, distinctly mucronate. Perigynium green, inconspicuously nerved, membranaceous; the orifice slightly oblique. Achenium oblong-obovate, triquetrous; the persistent style continuous.

Moist meadows: common. *Fl.* June. *Fr.* July. A graceful species.

36. CAREX FORMOSA, *Dew.* *Showy Sedge.*

Spikes mostly 4, oblong, distant, on nodding peduncles, the uppermost staminate below, the others all fertile; perigynium oblong, smooth, triangular, somewhat inflated, rather acute at each end, slightly 2-toothed at the apex, twice as long as the ovate acute scale. — *Dew. Car. l. c.* 8. *p.* 98. *t.* B. *f.* 6; *Schw. & Torr. Car. l. c. p.* 325; *Beck, bot. p.* 436; *Torr. Cyp. p.* 409; *Kunth, enum.* 2. *p.* 430.

Culm 12 – 18 inches high, triangular, leafy, smooth. Leaves about 2½ lines long, smooth or a little pubescent, pale green. Spikes 4 – 5, from one half to three fourths of an inch long, 8 – 13-flowered; the lower half of the uppermost one staminate; the scales whitish, lanceolate and rather obtuse. Peduncles filiform and exserted. Fertile scales broader than the sterile, with a prominent rough keel. Perigynium about 2 lines long, erect, indistinctly nerved; the orifice membranaceous and somewhat produced. Achenium triquetrous, oval, crowned with the continuous style: stigmas short, pubescent.

Wet meadows; western part of the State: rare. *Fl.* May. *Fr.* June.

37. CAREX DAVISII, *Schwein. & Torr.* *Davis's Sedge.*

Spikes mostly 4, somewhat distant, cylindrical-oblong, few-flowered, rather thick, peduncular and somewhat nodding, the uppermost one staminate below, the others all fertile; perigynium oblong, somewhat inflated, acute, smooth, indistinctly nerved, slightly 2-toothed, about as long as the awned scale. — *Schwein. & Torr. Car. l. c. p.* 326; *Torr. Cyp. p.* 409. C. aristata, *Dew. Car. l. c.* 7. *p.* 277, *and* 9. *t.* A. *f.* 1 (not of *R. Br.*). C. Torreyana, *Dew. l. c.* 10. *p.* 47; *Beck, bot. p.* 436; *Kunth, enum.* 2. *p.* 468 (excl. syn. C. Davisii and C. alpestris, *Dew.*). C. (anonymos) no. 4, *Muhl. gram. p.* 254.

Culm about a foot and a half high, triquetrous, leafy, rough above. Leaves about 2 lines wide, rough on the margin, often a little pubescent. Spikes about an inch long, on exserted peduncles; the terminal one somewhat clavate from the imbricated slender scales at the base, rarely all staminate: fertile spikes sometimes only 2. Fertile scales ovate, whitish, acuminate and tapering into a conspicuous rough bristle, which is often longer than the perigynium; the keel greenish. Perigynium about 2½ lines long, rather acute at the base, with a short beak, which is 2-toothed at the orifice. Achenium ovate-triquetrous, puncticulate-striate. Style continuous.

Wet meadows, along rivers; valley of the Hudson above the Highlands, and in the northern and western counties: rather frequent. *Fl.* May. *Fr.* June. The name under which this species was first described by my friend Prof. Dewey, was changed (as there was a *C. aristata* of R. Brown) to *C. Davisii*, in the monograph of Dr. de Schweinitz and myself, and published before Prof Dewey himself named the plant a second time. He was mistaken in supposing this publication of Schwein. & Torr. was *subsequent* to his.

E. *Spikes several; one or more of the terminal ones entirely staminate; the rest pistillate.*

* *Stigmas* 2.

38. CAREX RIGIDA, *Gooden.* *Rigid Sedge.*

Staminate spike mostly solitary, erect; fertile spikes 2 – 4, on short naked peduncles, rather remote, oblong-cylindrical, few-flowered: perigynium oval-elliptical, rather acute at each end, smooth, with a short entire beak, about as long as the ovate-oblong (blackish) somewhat obtuse scale.—*Gooden. in Linn. trans.* 2. *p.* 193. *t.* 22. *f.* 10; *Schk. Car. t.* U. *f.* 71;

Boott in Hook. fl. Bor.-Am. 2. *p.* 217; *Tuckerm. in Sill. jour.* 45. *p.* 40. C. saxatilis, *fl. Dan. t.* 159; *Schk.* Tt. *f.* 40; *Pursh, fl.* 1. *p.* 38; *Torr. Cyp. p.* 397; *Kunth, enum.* 2. *p.* 410 (not of *Linn.*, which is C. pulla, *Good.*, fide *Boott*). C. Bigelovii, *Torr. in Schwein. an. tab. l. c.* C. Washingtoniana, *Dew. Car. l. c.* 10. *p.* 272. C. nigra, *Schwein. & Torr. Car. l. c. p.* 336.

Culm 6 – 15 inches high, triquetrous, nearly smooth. Leaves about a line and a half wide, somewhat rigid. Fertile spikes variable in number, but most frequently 3 – 4, rarely 5, half an inch to an inch long; the lowest usually remote; the others often approximated: the lower peduncles 6 – 10 lines long, with bracts at the base which are destitute of sheaths. Fertile scales closely applied to the perigynium and equalling it in size, of a blackish brown color, with a pale narrow margin and keel. Perigynium nerveless, 1½ line long; the summit produced into a very short beak. Achenium obovate, compressed-triquetrous, dull brown, very minutely striate, crowned with the continuous style. Stigmas mostly 2.

Summit of Mount Marcy, Essex county. *Fl.* July. *Fr.* August. This somewhat variable plant is the *C. saxatilis* of most botanists, but (as has been ascertained by Dr. Boott) not of Linnæus. The original species proves to be *C. pulla*, Gooden.; while the plant usually called *C. saxatilis*, is *C. rigida*, Gooden. Numerous European specimens of the latter, in my herbarium, agree very well with those from Mount Marcy.

39. CAREX ANGUSTATA, *Boott.* *Large Bog Sedge.*

Staminate spikes 1 – 3, cylindrical; fertile spikes 2 – 4, distant, cylindrical, usually slender, often staminate at the summit, spreading or somewhat nodding, the lower one on a short peduncle, the others nearly sessile; stigmas 2; perigynium ovate, with a short acumination, smooth and nerveless, entire at the orifice, mostly longer and broader than the linear-oblong blackish-ferruginous rather obtuse scale; culm and leaves rough. — *Boott in Hook. fl. Bor.-Am.* 2. *p.* 218. C. acuta, *Muhl. gram. p.* 263; *Ell. sk.* 2. *p.* 237; *Schwein. & Torr. l. c. p.* 361; *Dew. Car. l. c.* 10. *p.* 265; *Beck, bot. p.* 442; *Darlingt. fl. Cest. p.* 41; *Linn. sp.* 2. *p.* 978?; *Kunth, enum.* 2. *p.* 412 (in part). C. stricta, *Lam. enc.* fide *Tuckerm. Car. p.* 20.

Culms 1½ – 3 feet high, growing in large thick tufts, sharply triquetrous and very rough on the angles, leafy. Leaves somewhat glaucous, erect. Bracts without sheaths, rough like the leaves, carinate. Staminate spikes most frequently solitary, but often 2 and rarely 3; the terminal an inch or more in length; the others shorter. Sterile scales oblong, obtuse. Fertile ones from three fourths of an inch to two and a half inches long, and about two and a half lines in diameter, dense, or the flowers rather loose and scattered toward the base: the lowest one on a short peduncle, from a sheathless bracteal leaf; the others usually sessile, often recurved; sometimes all oblong-cylindrical, sessile and erect; one or more of them staminate at the summit. Scales usually rather shorter than the perigynium, but sometimes longer, blackish brown, with a green keel. Perigynium a little more than a line long, usually nerve-

less, rather abruptly acute, with a very short beak. Achenium orbicular-obovate, pointed with the continuous style. Stigmas long and downy.

Wet meadows; very common. *Fl.* May. *Fr.* June. I have adopted the views of my excellent friend Dr. Boott, respecting this and its allied species. He has studied the genus CAREX with profound attention, and under most favorable circumstances; yet I must confess that the *C. angustata* is very difficult to distinguish from the European *C. acuta.*

40. CAREX CÆSPITOSA, *Linn.?* *Smaller Bog Sedge.*

Staminate spikes solitary or sometimes 2, cylindrical-oblong; pistillate mostly 3, cylindrical, obtuse, distant, densely flowered, often staminate at the summit, nearly erect, sessile; perigynium elliptical or oval, with a very short entire point, obscurely nerved, mostly longer than the oblong obtuse blackish scale; culm nearly smooth. — *Linn. sp.* 2. *p.* 978?; *Schk. Car. t.* Aa. & Bb. *f.*; *Pursh, fl.* 1. *p.* 38; *Muhl. gram. p.* 264; *Schwein. & Torr. l. c. p.* 359; *Dew. Car. l. c.* 10. *p.* 266; *Beck, bot. p.* 442; *Boott, l. c. p.* 217; *Kunth, enum.* 2. *p.* 411. C. concolor, *R. Br. in app. Parry's 1st voy. pp.* 183 & 308. C. Goodenovii, *Gay*, fide *Tuckerm. Car. p.* 11. C. lenticularis, *Michx. fl.* 2. *p.* 172?

Culms 12 – 18 inches high, not cespitose, triquetrous, slightly rough on the angles above. Leaves light green, smoothish except on the margin. Staminate spikes about an inch long; the scales obtuse, brown. Fertile spikes 3 – 4, sometimes staminate at the summit, 1 – 1½ inch long; the lowest on a short peduncle from a naked sheath. Bracteal leaves somewhat auriculate at the base. Fertile scales nearly black, with a green keel. Perigynium with an entire somewhat tubular orifice, green, compressed. Achenium broadly ovate-lenticular, dull.

Banks of streams, and in swamps; northern and western counties. *Fl.* May. *Fr.* June. Differs from the preceding (to which, in some of its forms, it is nearly allied) in its smaller size, thicker spikes, and smoothish culm. It also grows in patches, not in tufts like *C. acuta.*

41. CAREX AQUATILIS, *Wahl.* *Water Sedge.*

Sterile spikes several or sometimes only one, erect; fertile mostly 3, nearly sessile, cylindrical, dense, somewhat clavate and often staminate at the summit; perigynium obovate-elliptical, with a very short beak, the orifice entire, about as long the ovate-lanceolate rather acute scale; culm smoothish.—*Wahl. act. Holm.* 1803, *p.* 165; *Dew. Car. l. c.* 10. *p.* 267. *t.* E. *f.* 16; *Torr. Cyp. p.* 400; *Kunth, enum.* 2. *p.* 413; *Boott, l. c.* 2. *p.* 219.

Culm about 2 feet high, triquetrous, nearly smooth. Leaves pale green and glaucous, smoothish. Sterile spikes usually 2 or 3; the scales linear-oblong, rather obtuse. Fertile spikes 3 – 5, nearly sessile, erect, 1 – 2 inches long, densely flowered, tapering toward the base. Scales pale brown, with a greenish midrib: lower ones about the length of the perigynium, and often mucronate; the upper ones shorter. Perigynium smooth, acute at the base, very obscurely nerved; the beak extremely short and smooth, yellowish green. Achenium obovate, lenticular, smooth. Stigmas long and very pubescent.

Borders of lakes, in wet places. Lake Ontario, &c. (*Dr. Gray*); Niagara Falls, and in Essex county (*Dr. Knieskern*). *Fl.* June – July. *Fr.* August. Our plant agrees very well with Lapland specimens of *C. aquatilis* in my herbarium.

42. CAREX AUREA, *Nutt.* *Golden-fruited Sedge.*

Sterile spike solitary; fertile spikes 3 – 4, oblong, loosely flowered, the lower ones pedunculate; perigynium obovate or pyriform, obtuse, nerved, entire at the orifice, longer than the ovate acute scale. — *Nutt. gen.* 2. *p.* 205; *Schwein. & Torr. l. c. p.* 328. *t.* 25. *f.* 2; *Beck, bot. p.* 437; *Kunth, enum.* 2. *p.* 408. C. pyriformis, *Schwein. anal. tab. l. c.; Dew. Car. l. c.* 9. *p.* 69 & 11. *t.* 2. *f.* 30.

Culm 4 – 15 inches long, slender, erect or reclining, striate. Staminate spike 4 – 6 lines long, pedunculate, often fertile at the summit; the scales oblong, obtuse. Fertile spikes mostly 3; the lowest one remote, and furnished with a peduncle which is half an inch to an inch or more in length, sometimes almost pendulous; the upper ones approximated: fertile scales whitish, with a broad pale purple margin, often mucronate: rachis flexuous. Perigynium about one line long, membranaceous, orange-yellow when mature, somewhat ventricose, the orifice very minute and scarcely prominent. Achenium orbicular-oval, lenticular, finely striate and a little rough.

Wet borders of streams, and in swamps: not common. *Fl.* May – June. *Fr.* July.

43. CAREX CRINITA, *Lam.* (Plate CXLIII.) *Fringed Sedge.*

Spikes elongated, cylindrical, cernuous; the sterile 1 – 2, often fertile at the summit, or sometimes at the base; fertile 4 – 5, densely flowered, distant; perigynium roundish-obovate, somewhat ventricose, slightly beaked, entire at the orifice; scales cuneate, with a long much exserted subulate rough awn. — *Lam. enc.* 3. *p.* 379; *Schk. Car. t.* Eee. *f.* 125, *and t.* Ttt. *f.* 164; *Pursh, fl.* 1. *p.* 38; *Muhl. gram. p.* 229; *Ell. sk.* 2. *p.* 536; *Schwein. & Torr. Car. l. c. p.* 360; *Dew. Car. l. c.* 10. *p.* 270; *Beck, bot. p.* 442; *Darlingt. fl. Cest. p.* 40; *Kunth, enum.* 2. *p.* 415. C. paleacea, *Wahl. act. Holm.* 1803. *p.* 164. C. leonura, *Wahl.* (fide *Swartz. & Muhl.*).

Culm 2 – 4 feet high, triquetrous, rough on the angles, leafy below. Leaves pale green, 3 – 4 lines broad. Staminate spikes usually 2, one or two inches long, often with a few fertile flowers either at the summit or the base: scales lanceolate, with a slender point. Fertile spikes usually 4 but sometimes 3 or 5, pedunculate, 2 – 3 inches long, often attenuated at the base; the scales usually with very long spreading subulate points, which give the spikes a squarrose appearance. Perigynium membranaceous, smooth, slightly ventricose, sparingly nerved. Achenium broadly obovate-lenticular, acute, dull, smooth.

Wet meadows, and borders of rivulets: common. *Fl.* May – June. *Fr.* July. A variable species as to the length of the spikes and scales.

** *Stigmas* 3.

† *Perigynium inflated, with a more or less elongated beak.*

44. CAREX OLIGOSPERMA, *Michx.* *Few-fruited Sedge.*

Staminate spike solitary, slender, pedunculate; fertile spikes one or two, ovoid, distant, bracteate, few-flowered, the lower one on a short peduncle; perigynium ovoid, obtusely triangular, somewhat inflated, nerved, smooth, the beak short, entire at the orifice or minutely 2-toothed, rather longer than the ovate acute scale.—*Michx. fl.* 2. *p.* 174; *Torr. Cyp. p.* 421; *Kunth, enum.* 2. *p.* 499; *Boott, l. c.* 2. *p.* 220. C. Oakesiana, *Dew. Car. l. c.* 14. *p.* 351. *t.* Q. *f.* 55; *Kunth, l. c.*

Culm 1½ – 2 feet high, triangular, slightly rough on the angles. Leaves light green, linear, becoming involute when old, erect and somewhat rigid: bracts elongated, with short sheaths. Staminate spike 1 – 1½ inch long, very slender; the scales closely imbricated, oblong, obtuse. Fertile spikes mostly 2, but often solitary, about half an inch long: scales light brown, usually a little shorter than the perigynium, but sometimes equalling it in length. Perigynium 2¼ lines long, obtuse at the base, acuminate and pointed with a short beak, brownish when mature. Achenium triquetrous, smooth, acuminate with the rigid continuous style.

Borders of small lakes in Essex county. *Fl.* June. *Fr.* Early in August. Found also on the White mountains, and in the northern parts of British America.

45. CAREX BULLATA, *Schk.* *Inflated Sedge.*

Staminate spikes 2 – 3; fertile mostly 2, oblong-cylindrical, on exserted peduncles, erect or somewhat nodding; perigynia globose-ovoid, inflated, erect, smooth, strongly nerved, the summit tapering into a long beak which is 2-forked at the extremity and a little hispid, about twice as long as the lanceolate acute scale. — *Schk. Car.* 2. *p.* 85. *t.* Uuu. *f.* 166; *Pursh, fl.* 1. *p.* 45; *Dew. Car. l. c.* 9. *p.* 71; *Schwein. & Torr. Car. l. c. p.* 367; *Torr. Cyp. p.* 421; *Beck, bot. p.* 444; *Kunth, enum.* 2. *p.* 496. C. cylindrica, *Schwein. an. tab. l. c.* (not of *Tuckerm.*).

var. *cylindracea*: fertile spikes elongated, cylindrical, more densely flowered; perigynium ovoid, the beak nearly smooth. — *Dew. Car. l. c.* 11. *p.* 315; *Torr. & Gr. in Torr. bot. report for geol. surv.* 1840. C. bullata, β., *Torr. Cyp. p.* 422. C. monile, *Tuckerm. l. c. p.* 20; *Dew. Car. l. c.* 49. *p.* 47. *t.* 1. *f.* 116.

Culm 1½ – 2½ feet high, triquetrous, rough above, leafy. Leaves about 2 lines wide, longer than the culm. Staminate spikes mostly 3, slender and elongated; the scales lanceolate, rather acute, closely imbricated. Fertile spikes often solitary (rarely with a third few-flowered one at the base of the lowest staminate spike), 1½ – 2½ inches long, rather thick, nearly erect: lower one with a peduncle half an inch to an inch or more in length; the upper one on a short peduncle; the scales mostly about half as long as the perigynia, but sometimes about two thirds as long. Perigynia one third of an inch long, much inflated, strongly nerved; the beak long and slender, somewhat hispid (in β. smoothish), distinctly 2-forked. Achenium triquetrous, with a long and usually tortuous continuous style.

Swamps : not common : the var. *cylindracea* in the western part of the State. *Fl.* May. *Fr.* June.

46. CAREX CYLINDRICA, *Tuckerm.* *Cylindrical-spiked Sedge.*

Staminate spikes 2 – 3 ; fertile 1 – 3, remote, oval or oblong-cylindrical, on short peduncles, erect or inclined ; perigynia ovoid, inflated, conical-rostrate, spreading, strongly nerved, smooth, the beak 2-forked at the summit and a little hispid, about twice as long as the ovate-lanceolate scale.—*Tuckerm. l. c. p.* 20. C. Tuckermani, *Dew. Car. l. c.* 49. *p.* 48.

Culm 1½ – 2 feet high, triquetrous, leafy, smooth below, rough above. Leaves about two lines wide, overtopping the culm. Fertile spikes often solitary, but more frequently 2 and rarely 3, an inch or sometimes rather more in length, and from one half to three quarters of an inch in diameter ; the peduncles short and nearly naked. Perigynia 4 – 5 lines long, inflated, spreading, tapering to a tubular-conical beak. Scales acute, often less than half the length of the perigynium. Achenium triquetrous, with a long rigid continuous style.

Wet meadows : not rare in the interior of the State. Differs from the preceding in its shorter and stouter spikes, and more spreading perigynia. This species has much the appearance of *C. tentaculata ;* but that has more compact and longer spikes, and the scales are tipped with a long rough awn.

47. CAREX UTRICULATA, *Boott.* *Bladder-fruited Sedge.*

Staminate spikes 2 – 4, elongated ; fertile 2 – 4, cylindrical, rather stout, pedunculate ; perigynia oblong-elliptical, inflated, diverging, acuminate with a slender 2-cleft beak, longer than the lanceolate roughly awned scale. — *Boott, l. c.* 2. *p.* 221. C. vesicaria, *Schwein. & Torr. Car. l. c. p.* 365 ; *Dew. Car. l. c.* 10. *p.* 273 ; *Beck, bot. p.* 443, not of *Linn.* C. ampullacea, *Dew. Car. l. c.* 7. *p.* 266 ?

Culm about 2 feet high, stout, triquetrous, rough above, leafy. Leaves 3 – 4 lines wide, longer than the culm. Staminate spikes 1 – 2 inches long, mostly 3, occasionally bearing fruit at the summit ; the scales lanceolate and acute. Fertile spikes 2 – 4 inches long, and nearly half an inch in diameter, the uppermost one sometimes staminate at the summit : scales mostly a little shorter than the fruit ; the point long and awn-like. Perigynia very numerous, more or less spreading, about 3 lines long, abruptly contracted at the base, strongly nerved ; the beak moderately 2-forked. Achenium triquetrous, minute.

Wet meadows : northern and western counties. *Fl.* May. *Fr.* June. I have followed Dr. Boott in considering the *C. vesicaria* of most American botanists as distinct from the European plant. The former differs in its larger and more inflated perigynia, and shorter awnless scale.

48. CAREX SUBULATA, *Michx.* (Plate CXLIV.) *Awl-fruited Sedge.*

Sterile spike solitary, on a short peduncle ; fertile spikes mostly 3 – 4, sessile or with

included peduncles, very remote, few-flowered, often sparingly staminate at the summit; perigynium subulate, reflexed, bifid at the orifice, with the teeth reflexed; culm very slender. —*Michx. fl.* 2. *p.* 173; *Pursh, fl.* 1. *p.* 40; *Schwein. & Torr. Car. l. c. p.* 340. *t.* 26. *f.* 1; *Beck, bot. p.* 439; *Kunth, enum.* 2. *p.* 500. C. Collinsii, *Nutt. gen.* 2. *p.* 205; *Dew. Car. l. c.* 11. *p.* 317; *Darlingt. fl. Cest. p.* 36. C. Michauxii, *Dew. Car. l. c.* 10. *p.* 273. *t.* G. *f.* 21.

Culm 1 – 2 feet high, almost filiform, often reclining or even decumbent, obtusely triangular, leafy. Leaves $1\frac{1}{2}$ – 3 lines broad, deep green. Sterile spike 3 – 4 lines long; the scales lanceolate, acute. Fertile spikes usually 4 on the taller culms, but often 3 and rarely 5, and in the dwarf forms of the plant sometimes only 2, few- (4 – 10-) flowered; the upper ones sessile, the lower pedunculate, usually bearing several staminate flowers at the summit; the distance between the two lowest often 3 – 6 inches or more: fertile scales lanceolate, mucronate, about one third the length of the perigynium, persistent. Perigynia about half an inch long, very slender, slightly ventricose below, smooth, indistinctly nerved, arranged on the rachis in a somewhat distichous manner: orifice very oblique, and furnished with 2 subulate rigid abruptly reflexed teeth. Achenium linear-oblong, triangular, smooth, with a very long slender style.

Deep cedar swamps, Long Island. *Fl.* End of May. *Fr.* June – July.

49. CAREX FOLLICULATA, *Linn.* *Tall Yellow Sedge.*

Staminate spike solitary; fertile spikes 3 – 4 (in the dwarf form 2), ovoid, very remote, pedunculate, few-flowered; perigynia oblong-conical, somewhat inflated, tapering to a long point, many-striate, at length diverging, 2-toothed at the apex, the teeth mostly erect, about twice as long as the ovate mucronate scale.— *Linn. sp.* 2. *p.* 978; *Rudge in Linn. trans.* 7. *p.* 98. *t.* 9. *f.* 4; *Ell. sk.* 2. *p.* 545; *Gray in ann. lyc. N. York,* 4. *p.* 235, not of *Schk.* C. xanthophysa, *Wahl. Car. l. c. no.* 73; *Dew. Car. l. c.* 7. *p.* 274, *and* 10. *t.* D. *f.* 15, *and* 14. *p.* 353. *t.* R. *f.* 57 & 58 (varieties *nana* and *minor*); *Schwein. & Torr. Car. l. c. p.* 330; *Beck, bot. p.* 439; *Kunth, enum.* 2. *p.* 500. C. folliculata, *var.* xanthophysa, *Muhl. gram. p.* 244. C. rostrata, *Mich. fl.* 2. *p.* 273; *Dew. Car. l. c.* 39. *p.* 52.

Culm 1 – 4 feet high, erect, slender, obtusely triangular, smooth, leafy. Leaves 3 – 5 lines wide, flat, very smooth. Sterile spike nearly an inch long, on a short peduncle; the scales lanceolate, acute. Fertile spikes 4 in the tallest individuals, 2 or rarely solitary in the dwarf states of the plant, 8 – 10-flowered; the peduncles included or exserted; the rachis produced beyond the summit. Scales sometimes nearly as long as the perigynium, with a long slender rough point. Perigynium 6 – 8 lines long, at first nearly erect, but finally spreading; the teeth at the summit sometimes a little diverging. Achenium elliptical, triquetrous, crowned with the long continuous style.

Swamps: not common. *Fl.* June. *Fr.* July. The whole plant is at first of a bright green color, but is yellowish in age. There can be no doubt that this is the original *C. folliculata* of Linnæus. It occurs from the northern parts of Canada to Florida.

50. CAREX INTUMESCENS, *Rudge.* *Swollen-fruited Sedge.*

Fertile spikes 1 – 2, roundish, approximate, few-flowered, upper one sessile, lower one on a short peduncle; perigynia ovoid, acuminate-rostrate, much inflated, diverging, bicuspidate. — *Rudge in Linn. trans.* 7. *p.* 97. *t.* 9. *f.* 3; *Gray in ann. lyc. N. York,* 3. *p.* 236; *Torr. Cyp. l. c. p.* 420; *Darlingt. fl. Cest. p.* 36. C. folliculata, *Schk. Car. t.* N. *f.* 52, not of *Linn.*; *Pursh, fl.* 1. *p.* 42; *Muhl. gram. p.* 43; *Dew. Car. l. c.* 10. *p.* 32; *Schwein. & Torr. Car. l. c. p.* 338 (excl. syn. *Linn., Michx. & Ell.*); *Beck, bot. p.* 438; *Kunth, enum.* 2. *p.* 498.

var. *globularis:* culm taller and stouter; fertile spikes many- (20 – 30-) flowered. *Gray, l. c.*; *Torr. l. c.*

Culm about a foot and a half high, triquetrous, smooth, slender, leafy. Leaves broadly linear, dark green, slightly rough on the margin, taller than the culm. Sterile spike 1 – 2 inches long, erect, slender; the peduncle 1 – 3 inches long: scales lanceolate, acute. Fertile spikes mostly 2, but often solitary, rarely 3, usually close together, 6 – 10-flowered (in the variety often 25-flowered), more than an inch in diameter, sometimes with a few staminate flowers at the summit. Scales much shorter than the perigynium, ovate, acuminate. Perigynia about 7 lines long and 3½ lines in diameter at the base, dark green, tapering into a long conical beak, smooth and nerved, somewhat shining; the upper ones spreading almost horizontally; lower ones a little reflexed. Achenium triquetrous, grayish white, acuminated with the base of the long continuous style.

Wet meadows and swamps: frequent: var. *globularis*, meadows near Utica (*Dr. Gray*). *Fl.* June. *Fr.* July – August.

51. CAREX LUPULINA, *Muhl.* *Hop Sedge.*

Fertile spikes mostly 3, nearly sessile, ovoid-oblong, very thick, erect, approximate; perigynia ovoid, inflated, nerved, conical-rostrate, bicuspidate, much longer than the ovate or lanceolate scale. — *Muhl. in Willd. sp.* 4. *p.* 266, *and gram. p.* 241; *Schk. Car. t.* Ddd. *f.* 123, *and t.* Iiii. *f.* 194; *Ell. sk.* 2. *p.* 544; *Schwein. & Torr. Car. l. c. p.* 337; *Dew. Car. l. c.* 11. *p.* 165. *t.* L. *f.* 37; *Beck, bot. p.* 438; *Darlingt. fl. Cest. p.* 35; *Kunth, enum.* 2. *p.* 497.

var. *polystachya:* fertile spikes 4 – 5, oblong-cylindrical; the lowest one remote on a long peduncle. *Torr. l. c.*; *Dew. l. c.*; *Beck, l. c.*; *Kunth, l. c.*

Culm 2 – 3 feet high, stout, triquetrous, smooth. Leaves overtopping the culm, 3 – 4 lines broad, bright green. Sterile spike usually solitary, either nearly sessile or pedunculate; in the latter case, furnished with a foliaceous bract: scales narrowly lanceolate, tapering to a long hispid point. Fertile spikes mostly 3, but often 4, rarely only 2, an inch and a half or two inches long and as thick as a man's thumb, the lowest more or less pedunculate; in the *var.* 2 – 3 inches long, and the lowest on a long exserted peduncle. Scales rather more than half the length of the perigynium; the upper ones ovate; lower lanceolate. Perigynia 6 – 8

lines long, much inflated below, tapering to a conical beak above; the apex moderately bicuspidate. Achenium triquetrous, acute at each end, acuminated with the long continuous tortuous style.

Swamps: common; the *variety* in wet mountain meadows, Putnam county (*Dr. Barratt*). *Fl.* June. *Fr.* July.

52. CAREX SCABRATA, *Schwein.* *Rough-fruited Sedge.*

Fertile spikes about 5, rather remote, cylindrical, nearly erect, the lower ones on long peduncles; perigynia ovoid, acuminate-rostrate, somewhat ventricose, rough, the orifice oblique and slightly 2-toothed, longer than the ciliolate scale. — *Schwein. anal. tab. l. c.; Dew. Car. l. c. 9. p. 66, and 11. t. K. f. 32; Schwein. & Torr. Car. l. c. p. 345. t. 26. f. 2; Beck, bot. p. 440; Kunth, enum. 2. p. 455.*

Culm erect, about a foot and a half high, rather slender, triquetrous, rough on the angles. Leaves very rough, about three lines wide, dark green. Sterile spike solitary, an inch long, pedunculate: scales lanceolate, brown, with a green keel. Fertile spikes mostly 5, seldom so few as 3, and sometimes as many as 6, densely flowered, 1 – 1½ inch long and 2½ lines in diameter; the upper ones somewhat approximate; the lowest ones distant from one to three inches. Scales about two thirds the length of the perigynium, ovate, slightly ciliate on the margin. Perigynia triangular, strongly nerved, roughened with a short stiff pubescence, acute at the base, spreading when mature, scarcely two lines long; the beak rather short and pyramidal. Achenium obovoid, triquetrous.

Wet places, along brooks: frequent. *Fl.* May. *Fr.* June. The whole plant is dark green.

53. CAREX SCHWEINITZII, *Dew* *Schweinitz's Sedge.*

Sterile spikes usually 2, the lower one often pistillate at the base; fertile about 3, oblong-cylindrical, somewhat pendulous, rather remote, the peduncles included; perigynium oblong-ovoid, inflated, acuminate-beaked, bicuspidate at the summit, the peduncle included, about one third longer than the lanceolate-subulate scale. — *Dew. in Schwein. anal. tab. l. c., and Car. l. c. 9. p. 68. t. B. f. 8; Schwein. & Torr. Car. l. c. p. 366; Beck, bot. p. 443; Torr. Cyp. l. c. p. 422; Kunth, enum. 2. p. 518.*

Culm 12 – 15 inches high, triquetrous, leafy, rough on the angles above. Leaves 2 – 3 lines wide, taller than the culm, yellowish green. Staminate spikes 1 or 2 inches long, and rather slender; lower one often fertile below; the upper sometimes pistillate in the middle: scales lanceolate, acuminate, pale brown. Fertile spikes usually 3, but often 4, somewhat curved, rather densely flowered, 1½ – 2½ inches long: uppermost one nearly sessile; the rest on included or partly exserted peduncles. Scales lanceolate, with a long subulate rough point. Perigynia spreading, inflated below, with a long conical-subulate beak, yellowish when mature, smooth, sparingly nerved; the orifice distinctly 2-toothed. Achenium triquetrous, crowned with the long continuous style.

Wet meadows; western counties. *Fl* May. *Fr.* June.

54. CAREX RETRORSA, *Schwein.* *Backward-fruited Sedge.*

Sterile spikes 1 – 3; fertile usually 4 or 5, oblong-cylindrical; the upper ones usually approximated and appearing fasciculate, the peduncles short or included; lowest one distant, with an exserted peduncle; perigynia ovoid, inflated, reflexed, beaked, bicuspidate, much longer than the lanceolate scale.—*Schwein. anal. tab. l. c.; Dew. Car. 9. p. 67, and 11. t.* L. *f.* 36; *Schwein. & Torr. Car. l. c. p.* 366. *t.* 28 (bis), *f.* 2; *Beck, bot. p.* 443; *Kunth, enum. 2. p.* 503. C. reversa, *Spreng. syst. 3. p.* 827.

Culm a foot and a half or two feet high, triquetrous, slightly rough on the angles. Leaves longer than the culm, about 3 lines wide. Staminate spikes mostly 2 or 3, sometimes solitary, rarely 4, varying from half an inch to two inches long; the lower ones often fertile at the base; the terminal one rarely bearing a few fertile flowers towards the summit: scales oblong, rather acute. Fertile spikes often 5, rarely as many as 6, erect, an inch and a half or two inches long, and about half an inch in diameter; the 3 or 4 upper ones usually crowded together at the summit of the culm, but sometimes rather distant; the lowest one commonly several inches below the others, and supported on a conspicuous peduncle. Scale about half the length of the perigynium, pale brown, with a green keel. Perigynia very numerous, at first spreading horizontally, but finally reflexed, acuminate, beaked, strongly but sparingly nerved. Achenium small, triquetrous, acuminate with the long tortuous style.

Borders of ponds, and marshy borders of rivulets: frequent. *Fl.* May. *Fr.* June. In the young state, and with few spikes, it resembles *C. tentaculata*. It sometimes also makes an approach to *C. lupulina*.

55. CAREX TENTACULATA, *Muhl.* (Plate CXLIV.) *Long-pointed Sedge.*

Sterile spike solitary; fertile spikes 2 – 3, ovoid or oblong-cylindrical, mostly approximate, spreading, the peduncles included; perigynia crowded, ovoid, ventricose, nerved, acuminated with a very long beak, 2-toothed at the apex, longer than the lanceolate-subulate scale. — *Muhl. in Willd. sp. 4. p.* 266; *Schk. Car. t.* Ggg. *f.* 130; *Pursh, fl. 1. p.* 41; *Muhl. gram. p.* 239 (excl. syn. *Michx.*); *Ell. sk. 2. p.* 543; *Dew. Car. l. c. 10. p.* 34 (excl. syn. *Michx.*); *Schwein. & Torr. Car. l. c. p.* 335; *Beck, bot. p.* 438; *Darlingt. fl. Cest. p.* 35. C. rostrata, *Muhl. in Willd. sp. l. c.; Schk. l. c. t.* Hhh. *f.* 134; *Kunth, enum. 2. p.* 496 (not of *Michx.*).

Culm 12 – 18 inches high, triquetrous, leafy, rough on the angles. Leaves bright green, longer than the culm, 3 – 4 lines wide. Sterile spike on a short peduncle, long and slender; scales linear-lanceolate, pointed with a long rough bristle. Fertile spikes often only 2, rarely 4, approximated or somewhat distant, from three fourths of an inch to two inches in length and half an inch or more in diameter, yellowish green when mature, spreading almost horizontally; the uppermost one sessile; the others on slightly exserted peduncles. Scales about half the length of the perigynium; the awn rough. Perigynia spreading, about one third of

an inch long, few-nerved, attenuated into a long straight beak. Achenium triquetrous, small, puncticulate in longitudinal lines, acute at each end, pointed with the very long tortuous style.

Wet meadows : common. *Fl.* May. *Fr.* June. Schkuhr's figure of *C. rostrata* represents the ordinary form of the plant. I have from Mr. J. Carey a specimen of what appears to be a variety of this species, in which there are four distant short ovoid fertile spikes, the lower ones on long exserted peduncles ; but no staminate spike.

56. CAREX HYSTRICINA, *Willd.* *Porcupine Sedge.*

Sterile spike solitary ; fertile spikes mostly 3, oblong, cylindrical, thick, finally nodding ; peduncles of the uppermost one nearly included, of the others long and exserted ; perigynia crowded and spreading, ovoid, with a long beak, many-nerved, bifid at the orifice, twice as long as the awned scale. — *Willd. sp.* 4. *p.* 282 ; *Schk. Car. t.* Fff. *f.* 127 ; *Pursh, fl.* 1. *p.* 43 ; *Muhl. gram. p.* 252 ; *Ell. sk.* 2. *p.* 550 ; *Dew. Car. l. c.* 10. *p.* 25 ; *Schwein. & Torr. Car. l. c. p.* 355 ; *Beck, bot. p.* 441 ; *Darlingt. fl. Cest. p.* 40 ; *Kunth, enum.* 2. *p.* 497.

Culm 15 – 18 inches high, triquetrous, leafy, slightly rough on the angles. Leaves 2 – 3 lines wide. Sterile spike on a peduncle which is from one inch to three inches long, often bearing a few fertile flowers either at the base or at the summit ; the scales ovate-lanceolate, mucronate, pale brown. Fertile spikes sometimes 2 or 4 ; in the latter case, the lowest one is often remote from the others, which are mostly approximate, about an inch long : peduncles filiform. Scales oblong, emarginate, with a rough subulate awn. Perigynium marked with numerous nerves, smooth ; the beak long and slender, distinctly bicuspidate at the summit. Achenium small, triquetrous, smooth.

Wet meadows : not common. *Fl.* June. *Fr.* July – August. Resembles *C. tentaculata,* but can readily be distinguished by the exserted peduncles, many-nerved perigynium, and more strongly bidentate beak.

57. CAREX PSEUDO-CYPERUS, *Linn.* *Cyperus-like Sedge.*

Sterile spike solitary ; fertile spikes 3 – 4, cylindrical, thick, pendulous, approximated and the upper two somewhat geminate ; peduncles exserted ; perigynia ovoid-lanceolate, beaked, at length reflexed, many-nerved, divergingly 2-cleft at the summit, about one third longer than the lanceolate awned scale. — *Linn. sp.* 2. *p.* 978 ; *Schk. Car. t.* Mm. *f.* 102 ; *Pursh, fl.* 1. *p.* 44 ; *Muhl. gram. p.* 253 ; *Dew. Car.* 8. *p.* 71 ; *Schwein. & Torr. Car. l. c. p.* 355 ; *Beck, bot. p.* 442 ; *Kunth, enum.* 2. *p.* 501. C. furcata, *Ell. sk.* 2. *p.* 552.

Culm 2 – 3 feet high, stout, triquetrous, rough on the angles. Leaves 3 – 5 lines wide, bright green. Sterile spike 1 – 2 inches long, on a short peduncle ; the scales loosely imbricated, lanceolate-subulate, rough. Fertile spikes $1\frac{1}{2}$ – $2\frac{1}{2}$ inches long and about half an inch in diameter, spreading or pendulous ; the lower two more or less distant, on peduncles which are about an inch in length ; the upper ones usually so much approximated as to appear geminate. Fertile scales lanceolate, tapering to a long awn-like point. Perigynia nearly one

third of an inch long, slightly curved, strongly marked with numerous nerves; the summit 2-cleft, with the divisions finally spreading or divaricate. Achenium small, triquetrous, nearly smooth.

Deep swamps and borders of slow streams: rather common. *Fl.* June. *Fr.* July. This species is a native also of Europe and New-Holland.

58. CAREX LONGIROSTRIS, *Torr.* *Long-beaked Sedge.*

Sterile spikes commonly 3; pistillate 2 – 3, rather distant, cylindrical, on long peduncles, loosely flowered, finally pendulous; perigynium globose-ovoid, with a very long abrupt beak, smooth and nearly nerveless, bifid at the apex, a little longer than the lanceolate scale.—*Torr in Schwein. anal. tab. l. c.; Dew. Car. l. c.* 9. *p.* 257. *t.* C. *f.* 10; *Schwein. & Torr. Car. l. c. p.* 370; *Beck, bot. p.* 444; *Kunth, enum.* 2. *p.* 518. C. Sprengelii, *Dew. in Spreng. syst.* 3. *p.* 837.

Culm about two feet high, slender, triquetrous, nearly smooth. Leaves bright green and shining, 2 – 3 lines wide. Sterile spikes at the summit of a long slender peduncle, the lowest one often (and sometimes the others) bearing several fertile flowers; the scales lanceolate-acuminate, light brown. Fertile spikes 1 – 1½ inch long, spreading and finally pendulous; the uppermost one often sterile at the summit: peduncles 2 – 4 inches long. Scales lanceolate and ovate-lanceolate, pale, with a broad green keel. Perigynium about one fourth of an inch long, nearly globose at the base; the beak long, slender, and very abrupt; the apex obliquely truncate and slightly bifid. Achenium ovoid-triquetrous, minute, nearly smooth, but dull.

Shady rocky places, Oneida county (*Dr. Gray*); also in the northern part of the State. *Fl.* June. *Fr.* July.

59. CAREX TRICHOCARPA, *Muhl.* *Hairy-fruited Sedge.*

Sterile spikes 2 – 4; fertile 2 – 3, distant, pedunculate, erect, oblong-cylindrical, rather loosely flowered; perigynium ovoid-conical, beaked, acuminate, pubescent, bicuspidate, longer than the ovate acuminate scale.—*Muhl. in Willd. sp.* 4. *p.* 302; *Schk. Car. t.* Nnn. *f.* 148; *Pursh, fl.* 1. *p.* 40; *Muhl. gram. p.* 257; *Ell. sk.* 2. *p.* 540; *Dew. Car. l. c.* 7. *p.* 274, *and* 11. *p.* 158; *Schwein. & Torr. Car. l. c. p.* 362 (excl. syn. *Michx.*); *Kunth, enum.* 2. *p.* 484.

Culm about two feet high, triquetrous, a little rough above. Leaves 2 – 3 lines wide. Staminate spikes usually 3, but sometimes 4 or even 5, elongated and slender, sometimes pistillate at the summit; the scales oblong, obtuse, light brown. Fertile spikes usually 3, on partly exserted peduncles, 1½ – 2 inches long; the flowers nearly erect. Scale tapering to a long point, somewhat carinate, brownish purple, with a broad green midrib. Perigynium 3 lines long, densely pubescent and brownish when mature, nerved, inflated below, and tapering to a rather long beak; the summit conspicuously bicuspidate, with the segments more or less spreading. Achenium obovoid-triquetrous, very finely striate longitudinally.

In marshes; frequent in the northern and western parts of the State. *Fl.* June. *Fr.* July.

60. CAREX ARISTATA, *R. Br.* *Awned Sedge.*

Sterile spikes 2 4; fertile 2 – 4, distant, the upper ones sessile, lower on partly exserted peduncles, cylindrical, erect; perigynium somewhat inflated, tapering to a long conical beak, smooth, many-nerved, the beak deeply 2-cleft, with spreading segments, one third longer than the ovate-lanceolate awned scale; sheaths and under surface of the leaves pubescent. — *R. Br. in Richards. app. Frankl. narr. ed.* 2. *p.* 36; *Schwein. & Torr. Car. l. c. p.* 364; *Dew. Car. l. c.* 11. *p.* 161, *and* 27. *p.* 240. *t.* 5. *f.* 67; *Gray in ann. lyc. N. Y.* 3. *p.* 237; *Kunth, enum.* 2. *p.* 519. C. atherodes, *Spreng. syst.* 3. *p.* 828. C. mirata, *Dew. l. c.* 49. *p.* 48.

Culm 2 – 3 feet high, leafy, smooth, triquetrous. Leaves 2 – 3 lines wide; the under surface and the sheaths sparsely pubescent. Staminate spikes elongated, cylindrical, one or more of them often bearing some fertile flowers; the scales linear-lanceolate. Fertile spikes 2 – 3 inches long, for the most part rather loosely flowered; the peduncles of the lower ones very little exserted. Perigynia about one third of an inch long, many-nerved, ovoid below, and gradually tapering into a long conical-subulate beak, the extremity of which is conspicuously 2-forked. Scale sometimes nearly or quite as long as the perigynium; the extremity subulate-bristleform and rough. Achenium oblong-triquetrous, smoothish, somewhat pedicellate.

Watertown, Jefferson county (*Dr. Crawe*); Shore of Lake Ontario (*Dr. Sartwell*), according to *Prof. Dewey*. A very rare species; found also in British America. It is allied both to *C. trichocarpa* and *C. lacustris*.

†† *Perigynium villous, not inflated.*

61. CAREX UMBELLATA, *Schk.* *Umbel-spiked Sedge.*

Cespitose; fertile spikes mostly 4, ovoid, few-flowered, one or two of them nearly sessile on the upper part of the culm, the others on subradical peduncles; perigynium ovoid, acuminate-rostrate, somewhat roughly pubescent, obscurely and sparingly nerved, about as long as the ovate acuminate scale. — *Schk. in Willd. sp.* 4. *p.* 290, *and Car. t.* Www. *f.* 171; *Pursh, fl.* 1. *p.* 44; *Muhl. gram. p.* 256; *Dew. Car. l. c.* 10. *p.* 31, *and* 11. *p.* 316. *t.* D. *f.* 13; *Schwein. & Torr. Car. l. c. p.* 352; *Kunth, enum.* 2. *p.* 443.

Culms in dense tufts, from scarcely an inch to six inches or more in height. Leaves all radical, about a line wide, rough, much taller than the culm. Staminate spike single, about half an inch long, on a short mostly oblique peduncle, at the base of which is a single sessile fertile spike, and sometimes, a little distance below it, another on a short peduncle. Staminate scales ovate-lanceolate. Radical fertile spikes mostly 3, on slender erect peduncles of nearly equal length, and appearing somewhat umbellate. Sometimes the peduncles are so short that the spikes are nearly concealed by the leaves. Fertile scales often a little longer than the perigynium, pale. Perigynium about a line and a half long, with a short abrupt beak, very thin and membranaceous, attenuated at the base, margined, clothed with a short roughish sparse pubescence. Achenium rather obtusely triangular, scabrous. Style swollen toward the base, articulated.

Rocky hillsides: rather frequent. *Fl.* May. *Fr.* June.

62. CAREX PENNSYLVANICA, *Lam.* *Pennsylvanian Sedge.*

Sterile spike solitary, mostly pedunculate; fertile spikes 1 – 3, ovoid, few-flowered, nearly sessile, approximate; perigynium ovoid-globose, densely pubescent, with a short beak which is slightly 2-toothed at the apex, about the length of the ovate mucronate or acuminate scale. — *Lam. enc.* 3. *p.* 388; *Gray, Gram. & Cyp. part* 2. *no.* 162; *Torr. Cyp. p.* 410. C. marginata, *Muhl. in Willd. sp.* 4. *p.* 261, *and gram. p.* 237; *Schk. Car. t.* LII. *f.* 143; *Schwein. & Torr. Car. l. c. p.* 322; *Dew. Car. l. c.* 11. *p.* 163; *Kunth, enum.* 2. *p.* 443.

var. *Muhlenbergii*: sterile spike sessile; perigynium more ovoid, the beak longer and more distinctly 2-toothed at the summit. — *Gray, l. c. no.* 162; *Torr. Cyp. l. c.* C. varia, *Muhl. in Willd. sp.* 4. *p.* 259; *Schk. l. c. t.* UUU. *f.* 167; *Muhl. gram. p.* 236; *Ell. sk.* 2. *p.* 541; *Schwein. & Torr. l. c. p.* 329; *Dew. l. c. p.* 162; *Kunth, l. c.*

Culms 6 – 15 inches high, triquetrous, rough above, slender, growing in tufts. Leaves about a line and a half wide, somewhat glaucous. Sterile spike 6 – 8 lines long, usually on a short peduncle; the scales oblong, obtuse or somewhat acute, brownish red margined with white. Fertile spikes commonly 2, 4 – 8-flowered; the lowest one sometimes pedunculate. Scale often a little longer than the perigynium, brownish red with a pale margin. Perigynium roughly pubescent, about a line and a half long, very thin and membranaceous, somewhat triangular from the three prominent ribs; the beak often a little oblique. Achenium globose-triangular, obtuse. Style articulated.

Dry woods and hillsides: common. *Fl.* April. *Fr.* May. Very near *C. pilulifera* of Europe. I have never been able to find sufficient characters for distinguishing *C. Pennsylvanica* from *C. varia*. To the latter, Dr. Boott (who retains both species) joins *C. Emmonsii & collecta* of Dewey, and *C. Novæ-Angliæ* of Schweinitz.

63. CAREX NOVÆ-ANGLIÆ, *Schwein.* *New-England Sedge.*

Sterile spike on a short peduncle; fertile spikes 2 – 3, nearly sessile, ovoid, few-flowered, approximate; perigynium oblong-ovoid, somewhat triquetrous, attenuate at the base, beaked, minutely pubescent, rather longer than the ovate mucronate scale; culm filiform, nearly decumbent. — *Schwein. anal. tab. l. c.; Dew. Car. l. c.* 9. *p.* 64. *t.* 2. *f.* 7; *Schwein. & Torr. Car. l. c. p.* 328; *Kunth, enum.* 2. *p.* 408. C. collecta, *Dew. l. c.* 11. *p.* 314. *t.* 7. *f.* 44 !

Culm 6 – 8 inches high, very slender, leafy below. Leaves about a line wide, smoothish. Staminate spike about one third of an inch long; the scales reddish brown, oblong, rather obtuse. Fertile spikes mostly 2; the lower one on a short peduncle, 4 – 5-flowered. Fertile scale about two thirds the length of the perigynium, brownish purple, with a green keel. Perigynium rather more than a line long, attenuate at the base into a short stipe, somewhat triangular, green; the beak a little oblique, and slightly 2-toothed at the apex. Achenium closely invested with the very thin perigynium, ovoid, obtusely triangular. Style articulated at the base.

Mount Marcy, Essex county, on the Adirondack river (*Dr. Knieskern*). *Fl.* June July.

Fr. Early in August. Although very near *C. Pennsylvanica*, it seems to be pretty constantly distinct.

64. CAREX FILIFORMIS, *Linn.* *Slender-leaved Sedge.*

Sterile spikes mostly 2; fertile 2, ovoid-oblong, nearly sessile, distant, erect; perigynium elliptical, with a short beak, densely woolly, bifid at the apex, about as long as the ovate-lanceolate somewhat awned scale; leaves involute. — *Linn. sp.* 2. *p.* . . .; *Schk. Car. t.* K. *f.* 45; *Dew. Car. l. c.* 7. *p.* 268; *Schwein. & Torr. Car. l. c. p.* 364; *Beck, bot. p.* 443; *Kunth, enum.* 2. *p.* 485.

Culm 2 – 3 feet high, obtusely triangular, nearly smooth, rigid. Leaves principally radical, forming a tuft, about as tall as the culm, channelled or involute, ending in a long filiform point. Upper sterile spike elongated and pedunculate; the lower one much shorter, and sessile: scales oblong-lanceolate, acute, light brown with a green keel. Fertile spikes sometimes solitary, but usually 2, an inch or 2 inches distant from each other, varying from half an inch to 2 inches in length, densely fruited; the lower one often staminate at the summit. Scales acute, with a short rough awn or cusp, rather dark brown, with a green keel. Perigynia nearly two lines long, coriaceous, moderately 2-toothed; the teeth somewhat diverging. Achenium obovoid-triquetrous, acute at the base. Style stout, somewhat articulated near the base.

Bog meadows. *Fl.* May. *Fr.* June. Highlands of Putnam county, and in the western part of the State.

65. CAREX LANUGINOSA, *Michx.* *Woolly-fruited Sedge.*

Sterile spikes 2; fertile usually 2, ovoid-cylindrical, remote, erect, nearly sessile; perigynia ovoid, somewhat triangular, densely hairy, with a short bicuspidate beak, about the length of the oblong cuspidate or mucronate scale; leaves flat. — *Michx. fl.* 2. *p.* 175; *Torr. Cyp. p.* 410. C. pellita, *Muhl. in Willd. sp.* 4. *p.* 302; *Schk. Car. t.* Nnn. *f.* 149 & 150; *Pursh, fl.* 1. *p.* 44; *Muhl. gram. p.* 258; *Ell. sk.* 2. *p.* 554; *Dew. Car. l. c.* 9. *p.* 70; *Schwein. & Torr. Car. l. c. p.* 368 (excl. syn. *Michx.*); *Darlingt. fl. Cest. p.* 41; *Kunth, enum.* 2. *p.* 483.

Culm about 2 feet high, somewhat terete below, triangular above, a little rough. Leaves 2 – 3 lines wide, rough on the margin. Sterile spikes commonly 2, but sometimes single or three together; the uppermost cylindrical and pedunculate, the others sessile. Scales oblong-lanceolate, brown, acute, obtuse or mucronate. Fertile spikes sometimes 3; the lowest one on a short peduncle, about an inch long; one or more of the others occasionally pistilliferous at the base. Scale tapering to a slender acute point, and commonly mucronate. Perigynium coriaceous, 2 lines long, clothed with a dense roughish pubescence, brownish when mature, obscurely nerved. Achenium triquetrous, obtuse; the style indistinctly articulated near the base.

Wet meadows and borders of lakes: rather rare. *Fl.* May – June. Very near the preceding species.

66. CAREX VESTITA, *Willd.* *Short Woolly-spiked Sedge.*

Sterile spikes 1 – 2, cylindrical-oblong; fertile usually 2, ovoid-oblong, sessile, somewhat approximated, mostly staminate at the summit; perigynium short, ovoid, triangular, pubescent, nerved, with a short bifid beak, a little longer than the ovate mucronate scale.—*Willd. sp.* 4. *p.* 263; *Schk. Car. t.* Bbbb. *f.* 182; *Muhl. gram. p.* 238; *Ell. sk.* 2. *p.* 542; *Dew. Car. l. c.* 9. *p.* 261; *Schwein. & Torr. Car. l. c. p.* 331; *Kunth, enum.* 2. *p.* 518.

Culm about 2 feet high, triquetrous, rough on the margin, leafy below. Leaves about 2½ lines wide, rough. Sterile spike usually solitary; the scales linear-oblong, chestnut-colored, with a pale margin. Fertile spikes 2 or sometimes 3, three fourths of an inch long, commonly with a few sterile flowers at the summit. Scales chestnut-color, keeled. Perigynium 1½ line long; the short abrupt beak slightly 2-toothed. Achenium ovoid, triquetrous, dull. Style continuous.

Moist (or sometimes dry) sandy soils, western counties: rare. *Fl.* May. *Fr.* June.

67. CAREX PUBESCENS, *Muhl.* *Pubescent Sedge.*

Sterile spike solitary, sessile; fertile 3 – 4, oblong, erect, loosely flowered; perigynium obovoid-triquetrous, with an abrupt slender beak, pubescent, nearly entire at the orifice, about the length of the broadly ovate cuspidate scale; culm and leaves pubescent.—*Muhl. in Willd. sp.* 4. *p.* 281; *Schk. Car. t.* Eee. *f.* 126; *Muhl. gram. p.* 244; *Dew. Car. l. c.* 9. *p.* 73; *Schwein. & Torr. Car. l. c. p.* 333; *Kunth, enum.* 2. *p.* 455.

Culm 12 – 18 inches high, slender, leafy below, erect or somewhat decumbent. Leaves 2 – 4 lines wide, very pubescent, shorter than the culm. Sterile spike scarcely half an inch long; the scales whitish, oblong, keeled, mucronate. Fertile spikes mostly 3, about three fourths of an inch long, 6 – 10-flowered; the 2 upper ones (and sometimes all of them) rather close together; the lowest a little remote, and furnished with a short peduncle. Scales whitish, with a pale green prominent keel and a long abrupt acute point. Perigynium about 2 lines long, acute at the base, thin, densely pubescent; the short beak very slightly 2-toothed at the summit. Achenium conformed to the perigynium, minutely striate, crowned with a minute elevated border. Style distinctly articulated.

Woods and moist meadows: frequent. *Fl.* May. *Fr.* June.

††† *Perigynium smooth, short, not inflated: spikes dark purple or black.*

68. CAREX LIMOSA, *Linn.* *Mud Sedge.*

Sterile spike solitary, on a slender peduncle; fertile 2 – 3 (sometimes solitary), ovoid or oblong-ovoid, rather distant, pendulous; perigynia roundish-elliptical, compressed-triquetrous (green), with a very short entire beak, about the length of the ovate mucronate scale.—*Linn. sp.* 2. *p.* 977; *Wahl. in act. Holm.* 1803. *p.* 156; *Schk. Car. t.* X. *f.* 78; *Dew. Car. l. c.* 10. *p.* 41; *Schwein. & Torr. Car. l. c. p.* 358 (excl. syn. *Michx.*); *Kunth, enum.* 2. *p.* 461.

var. *irrigua*: scales acuminate, longer than the perigynia. — *Wahl. l. c.* C. lenticularis, *Dew. Car. l. c.* 7. *p.* 273, *and* 9. *t.* A. *f.* 2, not of *Michx.* C. paupercula, *Michx. fl.* 2. *p.* 172.

Culm usually about a span high, but sometimes two feet, triquetrous, very smooth, leafy below. Leaves a line or more in breadth, smooth and somewhat glaucous. Sterile spike 6 – 8 lines long, on a straight filiform peduncle : scales ovate-lanceolate, mucronate, brown with a green keel. Fertile spikes 6 – 8 lines long and 3 – 4 lines in diameter, rather loosely flowered, at first horizontal, but finally pendulous. Scales variable in length, sometimes obtuse, deep chestnut-brown or rarely green. Perigynium angular in front, acutely margined, obscurely few-nerved on the back, minutely beaked. Achenium ovoid-triquetrous, nearly smooth. Style continuous.

Sphagnous swamps, northern and western counties. *Fl.* June. *Fr.* July. A common species in the northern parts of Europe.

69. CAREX LIVIDA, *Willd.* *Livid Sedge.*

Sterile spike solitary, oblong, pedunculate ; fertile spikes 1 – 3, on exserted peduncles, cylindrical-oblong, somewhat distant, rather loosely flowered ; perigynia ovoid-oblong, somewhat triquetrous, smooth, obtusish, entire at the orifice, about the length of the ovate-oblong mostly obtuse scale. — *Willd. sp.* 4. *p.* 285 ; *Schk. Car. t.* Ssss. *f.* 211 ; *Gray in ann. lyc. N. York,* 3. *p.* 235 ; *Kunth, enum.* 2. *p.* 460. C. Grayana, *Dew. Car. l. c.* 25. *p.* 141. *t.* S. *f.* 59 ; *Kunth, l. c.* C. limosa, *var.* livida, *Wahl. act. Holm.* 1803. *p.* 162.

Culm 8 – 15 inches high, obtusely triangular and striate, nearly smooth. Leaves rigid, glaucous. Sterile spike about three fourths of an inch long ; the scales ovate, obtuse, chestnut-colored. Fertile spikes mostly 2, half an inch or more in length, on short exserted peduncles, an inch or two apart, or rather approximated. Scales varying from one third shorter to nearly the length of the perigynia, and from dark chestnut to light brown. Perigynia nearly 2 lines long, without a beak, but the minute orifice slightly produced, membranaceous, almost nerveless. Achenium ovoid-triquetrous, brownish when mature. Style continuous.

Sphagnous swamps, Oriskany (*Dr. Gray & Dr. Knieskern*). *Fl.* June. *Fr.* July. Our plant seems to differ in scarcely any respect from *C. livida* of the north of Europe.

†††† *Spikes green.*

70. CAREX FLAVA, *Linn.* *Large Yellow Carex.*

Sterile spike solitary, on a short peduncle ; fertile 2 – 3, roundish-ovoid, thick and compact, rather distant, the peduncles a little longer than the sheaths ; perigynia ovoid, spreading, the beaks bifid and more or less recurved, shorter than the ovate-lanceolate scale. — *Linn. sp.* 2. *p.* 975 ; *Schk. Car. t.* H. *f.* 36 ; *Michx. fl.* 2. *p.* 171 ; *Dew. Car. l. c.* 9. *p.* 65 ; *Schwein. & Torr. Car. l. c. p.* 333 ; *Kunth, enum.* 2. *p.* 446.

Culm 6 – 15 inches high, rather stiff, leafy below, smooth, triquetrous. Leaves 1 – 2 lines wide, of a yellowish tinge like the rest of the plant. Sterile spike on a more or less distinct peduncle, sometimes androgynous ; the scales oblong-lanceolate, brown. Fertile spikes 6 – 8 lines long and 5 in diameter, usually 3 ; the two upper mostly approximated ; the lowest an inch or two distant, and with a longer peduncle. Often there are but two spikes, which are either approximated or distant. Scales brownish, scarcely more than half the length of the

perigynium ; the keel green. Perigynium about three lines long, a little inflated at the base, nerved, attenuated to a long curved slightly bifid beak. Achenium obovoid-triquetrous. Style continuous.

Wet meadows : frequent. *Fl.* May. *Fr.* June. This species is common in Europe.

71. CAREX ŒDERI, *Ehrh.* *Œder's Sedge.*

Sterile spike nearly sessile ; fertile mostly 3, ovoid-oblong, nearly sessile, densely flowered ; perigynia ovoid-globose, smooth, horizontal, with a short straight beak, longer than the ovate-lanceolate scale.—*Schk. Car.* 1. *p.* 67. *t.* F. *f.* 26 ; *Michx. fl.* 2. *p.* 171 ; *Dew. Car. l. c.* 10. *p.* 38 ; *Schwein. & Torr. l. c. p.* 334. C. flava, *β.* patula, *Schk. l. c.* 2. *p.* 56. C. flava, *var.* Œderi, *Kunth, enum.* 2. *p.* 446. C. viridula, *Michx. l. c. p.* 170, not of *Schwein. & Torr.* C. irregularis, *Schwein. anal. tab. l. c.*

Culm 3 – 12 inches high, rather stiff, obtusely triangular, smoothish. Leaves mostly radical, shorter than the culm. Sterile spike 4 – 8 lines long, commonly sessile or nearly so, sometimes androgynous : scales lanceolate, light brown, obtuse. Fertile often 2, sometimes 4, usually approximated, but often (especially the lowest one) more or less remote, about half an inch long, now and then with a few sterile flowers at the summit. Scales one third longer than the perigynium, light brown, acute or obtuse. Perigynium about a line and a half long, strongly nerved, with a conical rostrate point, very slightly bifid at the extremity. Achenium obovoid-triquetrous. Style continuous.

Shore of Lake Ontario, near Sacket's Harbor (*Dr. Gray*) ; Niagara Falls (*Prof. Dewey*). *Fl.* May. *Fr.* June. A native also of Europe. Many botanists regard this plant as a variety of *C. flava*. It differs, however, in the more densely flowered spikes and much smaller perigynium, as well as in the shorter and straighter beak. The whole plant, as in that species, is of a yellowish color.

72. CAREX PALLESCENS, *Linn.* *Pale Pubescent Sedge.*

Sterile spike solitary, on a short peduncle ; fertile 2 – 3, on exserted peduncles, ovoid-cylindrical, approximated, densely flowered, finally somewhat cernuous ; perigynium obovoid-oblong, obtuse, smooth, about as long as the scale ; culm and leaves pubescent.—*Linn. sp.* 2. *p.* 977 ; *Schk. Car. t.* Kk. *f.* 99 ; *Dew. Car. l. c.* 7. *p.* 267 ; *Schwein. & Torr. Car. l. c. p.* 354 ; *Kunth, enum.* 2. *p.* 458.

Culm 12 – 18 inches high, erect, slender, triquetrous, leafy below. Leaves 1 – 2 lines wide ; the sheaths retrorsely pubescent. Sterile spike clubshaped, about three fourths of an inch long ; the scales lanceolate, very acute, light brown. Fertile spikes half an inch or more in length, thick, obtuse, at first erect, when old more or less cernuous. Scales ovate, acuminate, brown with a green keel. Perigynium 1½ line long, very obtuse, pale green when ripe ; the orifice minute and entire. Achenium obovoid-triquetrous. Style somewhat articulated.

Wet meadows : not common. *Fl.* May. *Fr.* June. This species is also a native of Europe.

73. CAREX TORREYI, *Tuckerm.* *Torrey's Sedge.*

Sterile spike solitary, oblong, on a short peduncle; fertile 2 – 3, erect, the peduncles included; perigynia obovoid, obtuse, somewhat triangular, nerved, smooth, mucronate, with a short entire orifice, one third longer than the acute mucronate scale; culm, leaves and bracts pubescent. — *Tuckerm. enum. Car. p.* 21; *Dew. Car. l. c.* 49. *p.* 43. *t.* Ee. *f.* 109.

Culm 12 – 18 inches high, triquetrous, rough on the angles. Sterile spike half an inch long, oblique; the scales ovate, mucronate, light brown, slightly pubescent on the margin. Fertile spikes few-flowered, half an inch in length; the short bracteal leaf at the base of the lower one strongly pubescent, and ciliolate on the margin. Scales ovate, a little pubescent on the prominent keel. Perigynium about a line and a half long, many-nerved, very obtuse, with the entire orifice somewhat produced. Achenium filling the cavity of the perigynium, short-obovoid, triquetrous. Style very short.

State of New-York (*Mr. Tuckerman*).

74. CAREX STRIATA, *Michx.* *Striated Sedge.*

Sterile spikes 1 – 2; fertile usually solitary, or rarely two and distant, oblong-cylindrical, pedunculate, erect, rather loosely flowered; perigynium oblong-ovoid, somewhat triangular, nerved, puncticulate-scabrous; the beak conical-oblique, entire at the orifice, a little longer than the ovate rather acute scale.—*Michx. fl.* 2. *p.* 174; *Tuckerm. Car. l. c.* C. polymorpha, *Muhl. gram. p.* 239 (in part); *Torr. Cyp. p.* 413 (in part). C. Halseyana, *Dew. Car. l. c.* 11. *p.* 313, *and* 19. *t.* N. *f.* 43; *Beck, bot. p.* 441; *Kunth, enum.* 2. *p.* 518.

Culm 12 – 18 inches high, triquetrous, slightly rough. Leaves about 3 lines wide, dark green. Sterile spikes 1 – 4, the upper one about an inch in length, the others shorter; the scales oblong, obtuse, pale reddish brown with a pale border. Fertile spikes about an inch long, rather loosely flowered. Scales sometimes rather obtuse, purplish brown, with a pale border and green keel. Perigynia 2½ lines long, slightly inflated, few-nerved, roughened with little elevated dots; the orifice membranaceous and oblique. Achenium oblong, triquetrous, very acute, rough like the perigynium. Style continuous.

Swamps, western counties: rare. *Fl.* May. *Fr.* June. My much valued friend Dr. Boott has convinced me that two distinct species have been confounded by Prof. Dewey and myself (as was done also by Muhlenberg), under the name of *C. Halseyana* or *polymorpha*. The northern plant is clearly the *C. striata* of Michaux, whose name is here adopted.

75. CAREX GRANULARIS, *Muhl.* *Granular-spiked Sedge.*

Sterile spike solitary, nearly sessile; fertile mostly 3, oblong-cylindrical, remote, densely flowered, the two lower on erect exserted peduncles; perigynia globose-ovoid, many-nerved; the beak very short, entire and somewhat recurved. — *Muhl. in Willd. sp.* 4. *p.* 279; *Schk. Car. t.* Vvv. *f.* 169; *Dew. Car. l. c.* 7. *p.* 272, *and* 11. *p.* 156; *Schwein. & Torr. Car. l. c. p.* 349; *Kunth, enum.* 2. *p.* 457.

Culm usually about a foot high, erect or somewhat decumbent, slender, triquetrous, smooth.

Leaves 2 – 3 lines wide, rather glaucous, smooth except a little roughness on the margin. Sterile spike about three fourths of an inch long, sometimes bearing a few fertile flowers either at the summit or in the middle ; the scales ovate-lanceolate, acute. Fertile spikes sometimes 4, three fourths of an inch long : upper one sessile ; the lower on elongated filiform peduncles. Scales about one third shorter than the perigynia, ovate, acuminate and mucronate, whitish with a pale green keel. Perigynium scarcely more than a line long, somewhat gibbous, of a dull orange-yellow when mature. Achenium obovoid-triquetrous, dull, smooth. Style continuous.

Moist meadows : frequent. *Fl.* May. *Fr.* June.

76. CAREX LAXIFLORA, *Lam.* *Loose-flowered Sedge.*

Sterile spike solitary, nearly sessile ; fertile mostly 3, oblong, loosely flowered, remote, pedunculate, erect ; perigynia ovoid-oblong, ventricose, obtuse, with the orifice nearly entire, finely striate, shining, rather longer than the ovate cuspidate scale. — *Lam. enc.* 3. *p.* 378 ; *Schk. Car. t.* Kkk. *f.* 141 ; *Muhl. gram. p.* 251 ; *Ell. sk.* 2. *p.* 549 ; *Schwein. & Torr. Car. l. c. p.* 348 ; *Dew. Car. l. c.* 10. *p.* 31 (excl. syn. *Michx.*) ; *Darlingt. fl. Cest. p.* 38 ; *Kunth, enum.* 2. *p.* 457. C. grisea, *Wahl. in act. Holm.* 1803. *p.* 154 (fide *Muhl.*).

Culm 12 – 18 inches high, erect, triquetrous, smooth. Leaves deep green, about 3 lines wide, much taller than the culm. Sterile spike on a short peduncle, slender, scarcely overtopping the uppermost fertile spike : scales lanceolate, acute, mucronate. Fertile spikes sometimes 4 or even 5, three fourths of an inch long, 6 – 10-flowered ; the upper two often approximated, and on short nearly included peduncles ; the lowest from one to four inches distant, on a longer peduncle. Scales broadly ovate, whitish with a green keel, attenuated above into a long rough cusp or short awn, which sometimes exceeds the perigynium in length. Perigynium obscurely triangular, 2½ lines long, green when ripe, obtuse at the base ; the orifice minute and indistinctly 2-toothed. Achenium obovoid-triquetrous, finely striate. Style continuous.

Meadows and moist woods : common. *Fl.* May. *Fr.* June.

77. CAREX CONOIDEA, *Schk.* *Conical-fruited Sedge.*

Sterile spike on a rather long peduncle ; fertile spikes 2 – 3, cylindrical-oblong, remote, rather densely fruited, the upper one nearly sessile, the lower on a long peduncle ; perigynia diverging, ovoid-oblong, nerved, somewhat gibbous and oblique at the summit, the orifice entire, rather longer than the ovate cuspidate scale. — *Schk. Car.* 2. *p.* 67. *t.* Vvv. *f.* 168 ; *Dew. Car. l. c.* 10. *p.* 47 ; *Ell. sk.* 2. *p.* 548 ; *Torr. Cyp. p.* 414. C. tetanica, *Schwein. & Torr. Car. l. c. p.* 347 ; *Muhl. gram. p.* 250, excl. syn. *Schk. &c.* C. granularioides, *Schwein. anal. tab. l. c. ; Dew. l. c.* 9. *p.* 262. *t.* A. *f.* 4 ; *Kunth, enum.* 2. *p.* 453.

Culm 8 – 12 inches high, slender, triquetrous, rough on the angles. Leaves about two lines wide, mostly shorter than the culm, bright green. Sterile spike half an inch long ; the peduncle about the same length ; the scales oblong, rather obtuse. Fertile spikes half an inch

long, mostly rather few-flowered, more or less distant. Scales sometimes exceeding the perigynium, pale with a green keel, ending in a prolonged rough point. Perigynium 2 lines long, the length nearly twice as great as the diameter, many-nerved, smooth, somewhat obtuse. Achenium oblong, triquetrous, acuminate, smooth. Style stout and somewhat clavate.

Moist meadows : not frequent. *Fl.* May. *Fr.* June. Kunth has confounded this species with *C. tetanica.*

78. CAREX DIGITALIS, *Willd.* *Slender Wood Sedge.*

Sterile spike solitary ; fertile spikes usually 3, few-flowered and loose, remote, slender, on long exserted loose or somewhat cernuous peduncles ; perigynium ovoid, triquetrous, smooth, striate, with a short beak and a little recurved, entire at the orifice, rather longer than the ovate mucronate awn. — *Willd. sp.* 4. *p.* 298 ; *Muhl. gram. p.* 255 ; *Dew. Car. l. c.* 11. *p.* 147 ; *Kunth, enum.* 2. *p.* 454, excl. syn. *Schwein. & Torr. and Ell.* C. oligocarpa, *Schwein. & Torr. l. c. p.* 344, not of *Schk. ; Dew. Car. l. c.* 10. *p.* 280, *and var.* Vanvleckii, *t. f.* 20. C. Vanvleckii, *Schwein. anal. tab. l. c.* C. Vleckii, *Spreng. syst.* 3. *p.* 821.

Culm 6 – 15 inches high, slender, sharply triquetrous, with the angles almost winged. Leaves usually not more than 1 – 2 lines wide, but sometimes from half an inch to nearly an inch in breadth, light green and somewhat glaucous. Sterile spike on a slender peduncle which arises from the sheath of the uppermost fertile spike, not bracteate ; the scales lanceolate, obtusish, pale brown. Fertile spikes 2 – 3, sometimes 4, half an inch or more in length, 6 – 9-flowered. Scales tawny with a green keel, which is produced into a mucronate point. Perigynia a line and a half long, sharply triangular, acuminated with a very short slightly recurved beak. Achenium obovoid-triquetrous, smooth. Style continuous.

Woods and hillsides : rare. *Fl.* May. *Fr.* June. Dr. Gray has ascertained this to be the genuine *C. digitalis* of Willdenow. A broad-leaved state of the plant was found by Dr. Crawe in Jefferson county.

79. CAREX OLIGOCARPA, *Schk.* *Small Few-fruited Sedge.*

Sterile spike solitary, pedunculate ; fertile spikes 2 – 3, very few-flowered, distant, erect, on exserted peduncles ; perigynium oval-triquetrous, attenuate at each end, striate, slightly recurved at the tip, entire, about as long as the ovate mucronate scale.—*Schk. Car.* 2. *p.* 58. *t.* Vvv. *f.* 170 ; *Muhl. gram. p.* 242 ; *Kunth, enum.* 2. *p.* 457, excl. syn. *Torr. and Dew.* C. Sartwelliana, *Gay.*

var. *major :* taller, and the fruit larger ; culm and leaves minutely and roughly pubescent. — C. Hitchcockiana, *Dew. Car. l. c.* 10. *p.* 274. *t.* E. *f.* 17 ; *Beck, bot. p.* 442 ; *Kunth, l. c. p.* 457.

Culm about a foot high (15 – 24 inches in the large *var.*), erect, triquetrous. Leaves 2 – 4 lines wide, dark green, overtopping the culm. Sterile spike about half an inch long, and its peduncle about the same length : scales oblong, rather obtuse, tawny with a green keel.

Fertile spikes mostly 3, sometimes 4, usually remote, but the upper two often somewhat approximated, 3 – 6-flowered ; the flowers distant. Scale pale with a green keel, often exceeding the perigynium ; the point rough. Perigynia 2 (in the *var.* $2\frac{1}{2}$) lines long, distinctly striate. Achenium obovoid-triquetrous, smooth. Style stout.

Woods ; northern and western counties. *Fl.* May. *Fr.* June. The smaller form of the plant is rare in the Northern States, but is common in Kentucky and Ohio. Dr. Gray has ascertained that it is the true *C. oligocarpa* of Schkuhr and Willdenow, but the figure of the former does not represent it very accurately.

80. CAREX TETANICA, *Schk.* *Crooked-necked Sedge.*

Sterile spike solitary, pedunculate ; fertile spikes 2 – 3, oblong-cylindrical, loosely flowered, remote, the lowest on an elongated peduncle ; perigynium obovoid, smooth, many-nerved, the apex recurved and entire, shorter than the ovate acute or mucronate scale.—*Schk. Car.* 2. *p.* 68. *t.* Oooo. *f.* 207 ; *Dew. Car. l. c.* 11. *p.* 312, *and* 19. *t.* N. *f.* 49, not of *Schwein. & Torr. ; Torr. Cyp. p.* 414.

Culm 6 – 10 inches high, slender, erect, triquetrous. Leaves about a line wide, light green, longer than the culm. Sterile spike three fourths of an inch long, on a slender peduncle ; the scales oblong, obtuse, reddish brown with a green keel. Fertile spikes 6 – 8 lines long ; the lowest usually very remote. Scales broadly ovate ; the lowest distinctly mucronate ; the upper merely acute, purplish brown with a green keel. Perigynia one and a half line long, somewhat spreading and often a little recurved, smooth, acute at each end in the young state, obovoid when mature. Achenium obovoid, triquetrous, smooth. Style continuous.

Wet meadows : rare. Western part of the State. *Fl.* May. *Fr.* June.

81. CAREX ANCEPS, *Willd.* *Two-edged Sedge.*

Sterile spike solitary, pedunculate ; fertile mostly 3, slender, remote, loosely flowered ; peduncles of the lower ones exserted, of the upper included ; perigynium oval, obtusely triangular, smooth, acute, striate, the point oblique and somewhat recurved, with the orifice entire, mostly shorter than the ovate mucronate or acute scale.—*Willd. sp.* 4. *p.* 278 ; *Schk. Car. t.* Fff. *f.* 128 ; *Dew. Car. l. c.* 10. *p.* 36, *and* 19. *t.* N. *f.* 47 ; *Schwein. & Torr. l. c. p.* 343 ; *Darlingt. fl. Cest. p.* 37 ; *Kunth, enum.* 2. *p.* 455. C. plantaginea, *Schk. Car. t.* Kkkk. *f.* 195 ; *Muhl. gram. p.* 235 ; *Ell. sk.* 2. *p.* 547. C. heterosperma, *Wahl. act. Holm.* 1803. *p.* 151.

Culm 12 – 15 inches high, triquetrous, often compressed and somewhat 2-edged above, rough, leafy. Radical leaves broad (sometimes an inch or more), with strong longitudinal nerves, somewhat glaucous, generally remaining green through the winter : culm-leaves narrower, from two lines to nearly half an inch long. Sterile spike oblong ; the peduncle variable in length, often short : scales oblong, rather obtuse. Fertile spikes 2 – 5, erect, an inch long, slender ; the flowers alternate on a flexuous rachis. Peduncles 2-edged. Scales more or less

broadly ovate, generally mucronate or acute, but sometimes nearly obtuse, pale tawny with a green keel. Perigynium 1½ line long, distinctly striate, gibbous, with a longish curved point, acute at the base. Achenium obovoid, triquetrous. Style short, somewhat articulated.

Woods and grassy places : very common. *Fl.* May. *Fr.* June. The narrow-leaved state of the plant usually grows in moist places.

82. CAREX BLANDA, *Dew.* *Pale Smooth Sedge.*

Sterile spike solitary, pedunculate, triquetrous ; fertile spikes mostly 3, oblong-cylindrical, rather loosely flowered, the uppermost one nearly sessile, the lowest on a long peduncle ; perigynia obovoid, somewhat triangular, nerved, smooth, recurved and entire at the point, scarcely longer than the ovate mucronate scale. — *Dew. Car. l. c.* 10. *p.* 45, *and* 11. *t.* K. *f.* 33 ; *Kunth, enum.* 2. *p.* 453. C. striatula, *Michx. fl.* 2. *p.* 173. C. conoidea, *Muhl. gram. p.* 248, not of *Schk.*

Culm 8 – 12 inches high, leafy, triquetrous, roughish on the angles. Leaves 2 – 3 lines wide, pale green and somewhat glaucous. Sterile spike half an inch to an inch or more in length ; the peduncle sometimes elongated, but usually short : scales oblong, rather obtuse, pale brown. Fertile spikes 2 - 4, about three fourths of an inch long ; the two upper ones often approximated, the lowest remote : peduncles 2-edged. Scales tawny with a green keel : lower ones cuspidate, nearly as long as the perigynium ; the upper ones shorter. Perigynium 1½ line long, obtuse, with a short recurved point, yellowish when mature. Achenium obovoid-triquetrous. Style very short, somewhat articulated.

Woods, usually in dry soil : common. *Fl.* May. *Fr.* June. This plant is difficult to distinguish from certain forms of *C. anceps.* If it is a good species, it should take the name of *C. striatula,* that being the older name.

83. CAREX CRAWEI, *Dew. mss.* *Crawe's Sedge.*

Sterile spike single, oblong ; fertile 2 – 3, oblong-cylindrical, distant, erect, rather closely flowered, the lowest on a longish peduncle ; perigynium ovoid-oblong, pointed with a short beak, slightly nerved, entire at the orifice, twice as long as the ovate scale. — *Dew. in lit.*

Whole plant light green. Culm 4 – 8 inches high, erect, triquetrous, leafy. Leaves about 2 lines wide, smooth, as long as the culm. Sterile spike pedunculate, about three fourths of an inch long ; the scales lanceolate, rather obtuse, light brown, scarious on the margin, with a green keel. Fertile spikes 6 – 8 lines long ; the lowest on a short exserted peduncle. Scales broadly ovate, mostly acute, tawny with a green keel. Perigynium 1½ line long, slightly inflated, obtuse, with a very short beak which is a little recurved. Achenium oblong, triquetrous, acuminate. Style continuous.

Banks of Black river, near Watertown (*Dr. Crawe*). This new species was communicated to me by Prof. Dewey.

84. CAREX PLANTAGINEA, *Lam.* *Plantain-leaved Sedge.*

Sterile spike solitary, pedunculate (dark purplish brown); fertile 3 – 4, on exserted or included peduncles which arise from leafless (mostly colored) sheaths, loosely flowered; perigynium ovoid-elliptical, acute at each end, triquetrous, smooth, striate, the point somewhat recurved, entire, longer than the ovate cuspidate scale. — *Lam. enc.* 3. *p.* 398; *Michx. fl.* 2. *p.* 173; *Pursh, fl.* 1. *p.* 42; *Dew. Car. l. c.* 7. *p.* 273, 11. *p.* 155, *and* 19. *t.* N. *f.* 46; *Schwein. & Torr. Car. l. c. p.* 342; *Kunth, enum.* 2. *p.* 452. C. latifolia, *Schk. Car.* 1. *p.* 104. *t.* U. *f.* 70?; *Wahl. in act. Holm.* 1803. *p.* 156.

Culm 8 – 20 inches high, smooth, triquetrous. Leaves all radical, deep green, shorter than the culm, from half an inch to an inch broad, with three of the nerves usually much stronger than the others, smooth and flat. Sheaths leafless, generally of a dark purple color, but sometimes green, in the young state almost concealing the culm, each terminating in a short cusp. Sterile spike oblong, elevated on a peduncle which is an inch or more in length. Scales ovate-lanceolate, rather obtuse. Fertile spikes mostly 4, sometimes 5, oblong, few- (3 – 8-) flowered: peduncles of the upper ones nearly enclosed; of the lowest, exserted. Scales varying from one half to the entire length of the perigynium, purplish brown with a green keel. Perigynium about 2½ lines long, green; the orifice entire and open. Achenium obovoid, triquetrous, smooth. Style continuous.

Shady rocky ravines, in good soil: rare. *Fl.* April – May. *Fr.* End of May. A well characterized species, being easily distinguished by its leafless sheaths; but the broad-leaved form of *C. anceps* is often mistaken for it.

85. CAREX CAREYANA, *Torr.* (Plate CXLV.) *Carey's Sedge.*

Sterile spike solitary, oblong; fertile 2 – 3, oblong, few-flowered, loose, the uppermost close to the sterile spike, lower ones distant, on exserted peduncles; perigynium ovoid, acuminate, the point nearly straight, triquetrous, smooth, nerved, attenuated at the base, entire at the orifice, nearly twice as long as the ovate mucronate scale. — *Dew. Car. l. c.* 30. *p.* 60. *t.* Bb. *f.* 88; *Torr. Cyp. p.* 415; *Kunze, suppl. t.* 27.

Culm 15 – 18 inches high, erect, triquetrous, smooth, somewhat leafy. Radical leaves 4 – 7 lines wide, dark green, strongly nerved: leaves of the culm narrower and much shorter. Sterile spike about half an inch long, nearly sessile or (when the uppermost spike is abortive) elevated on a peduncle: scales light chestnut-color, oblong, obtuse. Fertile spikes half an inch in length, 4 – 8-flowered, and rather distant on the rachis; upper one with the peduncle either included or exserted. Scales pale reddish brown, with a green keel. Perigynium nearly 2½ lines long, acute at each end; the point nearly straight. Achenium oval, triquetrous, light brown. Style slightly articulated near the base.

Shady dry woods, Auburn (*J. Carey, Esq.*). *Fl.* Early in May. Nearly allied to *C. plantaginea*, and also approaching *C. digitalis*. This handsome species has been found also in Ohio, by W. S. Sullivant, Esq.

86. CAREX EBURNEA, *Boott.* *Bristle-leaved White Sedge.*

Sterile spike solitary; fertile 3 – 4, on exserted peduncles, erect, 3 – 6-flowered; upper ones approximated, overtopping the sterile spike; lowest one commonly remote; perigynia obovoid, triquetrous, obscurely nerved, shining, the beak short and acuminate, entire at the orifice, longer than the hyaline ovate scale; leaves setaceous. — *Boott in Hook. fl. Bor.-Am.* 2. *p.* 227. C. alba, *Dew. Car. l. c.* 7. *p.* 266; *Schwein. & Torr. Car. l. c. p.* 341, not of *Scopol.* C. alba, *var.* setifolia, *Dew. l. c.* 10. *p.* 280, *and* 11. *p.* 316. *t.* H. *f.* 26; *Kunth, enum.* 2. *p.* 474. C. paupercula, *Torr. Cyp. p.* 415, not of *Michx.*

Culms densely cespitose, 5 – 12 inches long, setaceous, smooth, sulcate, naked; the base clothed with yellowish sheaths, which terminate above in rudimentary leaves. Leaves shorter than the culm, forming a radical tuft. Sterile spike 2 – 3 lines long, very slender; the scales lanceolate, whitish. Fertile spikes mostly 3, all clustered on the upper part of the culm, and somewhat corymbose, or one of them (especially when there are 4) a little remote: peduncles arising from leafless sheaths. Scales whitish and membranaceous, acute or obtuse. Perigynium scarcely one line long, at first green, but brownish olive when mature, with a short abrupt beak which is a little oblique; the orifice whitish. Achenium elliptical, triquetrous, olivaceous with pale angles.

Limestone hills, Goat Island (*Prof. Dewey*); Jefferson County (*Dr. Crawe*); Trenton Falls (*Dr. Knieskern*). *Fl.* May. *Fr.* June. A delicate little species, nearly allied to *C. alba* of Europe, but quite distinct.

87. CAREX FLEXILIS, *Rudge.* *Fringed Sedge.*

Sterile spike solitary, oblong, pedunculate; fertile 3 – 4, oblong-cylindrical, on nodding naked peduncles; perigynium ovoid, beaked, 2-toothed, about the length of the ovate ciliolate scale; leaves and bracts ciliate. — *Rudge in Linn. trans.* 7. *t.* 10. *f.* 1; *Boott in Hook. fl. Bor.-Am.* 2. *p.* 227. C. blepharophora, *Gray in ann. lyc. N. York,* 3. *p.* 237; *Dew. Car. l. c.* 30. *p.* 59. *t.* Aa. *f.* 85; *Torr. Cyp. p.* 427.

Culm 12 – 18 inches high, erect, smooth, leafy at the base. Leaves about 2 lines wide, pale green and somewhat glaucous, much shorter than the culm, more or less pubescent especially on the under surface. Bracts very short, scale-like, not sheathing the peduncles. Sterile spike three fourths of an inch long, obscurely triangular; the peduncle about an inch in length: scales tawny, oblong. Fertile spikes three fourths of an inch in length, rather densely flowered, on slender filiform peduncles. Scales rather obtuse, tawny; the midrib prominent. Perigynium smooth, 2 lines long, with an acute slender conical beak. Achenium oval-triquetrous, smooth. Style continuous.

Moist shady places. Oneida county (*Dr. Gray*); on the Canal near Rome, and in Essex county (*Dr. Knieskern*). *Fl.* June. *Fr.* July.

88. CAREX ARCTATA, *Boott.* *Short-beaked Wood Sedge.*

Sterile spike single, cylindrical; fertile 3 – 4, remote, on long nodding peduncles, slender, rather loosely flowered, attenuate at the base; perigynia ovoid-elliptical, triquetrous, nerved, the beak short, slightly 2-toothed at the orifice, longer than the ovate acuminate mucronate scale. — *Boott in Hook. fl. Bor.-Am.* 2. *p.* 227. C. sylvatica, *Dew. Car. l. c.* 10. *p.* 40; *Schwein. & Torr. Car. l. c. p.* 350, not of *Huds.*

Culm 9 – 18 inches high, slender, leafy, triquetrous. Leaves 2 – 3 lines wide, pale green and somewhat glaucous, shorter than the culm. Sterile spike about three fourths of an inch long, slender, sometimes bearing a few fertile flowers: scales lanceolate, pale with a green keel. Fertile spikes commonly 4, from an inch to an inch and a half long and about 2 lines in diameter, at first erect, but finally more or less cernuous; the flowers alternate, and somewhat remote toward the base. Peduncles filiform, much exserted. Scales abruptly acuminate, the point ending in a cusp or short awn, whitish and membranaceous, with a green keel. Perigynium about 2 lines long, with a few but distinct nerves, green when young, but finally brownish, about one third longer than the scale. Achenium obovoid-triquetrous.

Moist woods and meadows; northern and western parts of the State. *Fl.* May. *Fr.* June. This species was confounded with *C. sylvatica*, till it was separated by Dr. Boott. The latter is stouter, the fertile spikes more compact, the beak much longer, etc. Sometimes, however, I find specimens that seem to be intermediate between this plant and *C. debilis.*

89. CAREX DEBILIS, *Michx.* *Weak Sedge.*

Sterile spike solitary, pedunculate; fertile mostly 4, on long nodding peduncles, remote, filiform, the flowers alternate on a flexuous rachis; perigynium oblong, smooth, attenuated at each end, slightly bifid, twice as long as the ovate-lanceolate mucronate scale.—*Michx. fl.* 2. *p.* 172; *Torr. Cyp. p.* 416; *Boott in Hook. fl. Bor.-Am.* 2. *p.* 216. C. tenuis, *Rudge in Linn. trans.* 7. *p.* 96. *t.* 9. *f.* 2. C. flexuosa, *Muhl. in Willd. sp.* 4. *p.* 297; *Schk. Car. t.* Ddd. & Aaaa. *f.* 124; *Pursh, fl.* 1. *p.* 43; *Muhl. gram. p.* 253; *Dew. Car. l. c.* 10. *p.* 40; *Schwein. & Torr. Car. l. c. p.* 351; *Darlingt. fl. Cest. p.* 39; *Kunth, enum.* 2. *p.* 471.

Culm 1 – 2 feet high, weak and slender, leafy, smoothish. Leaves about two lines wide. Sterile spike very slender, elongated, rarely bearing a few fertile flowers: scales lanceolate, obtuse, pale. Fertile spikes 3 – 4, an inch and a half or two inches long, 10 – 18-flowered; the filiform exserted peduncles an inch or more in length. Scales acuminate, light brown with the keel green. Perigynium $2\frac{1}{2}$ lines long, somewhat fusiform, very acute at each end, obtusely triangular, nerved. Achenium ovoid-triquetrous, smooth, brown when old. Style slender, continuous.

Moist woods and meadows: common. *Fl.* May. *Fr.* June.

90. CAREX MILIACEA, *Muhl.* *Millet-like Sedge.*

Sterile spike solitary, pedunculate; fertile 3, cylindrical, slender, on filiform cernuous peduncles; perigynium ovoid, with a short beak, triquetrous, smooth, nerveless, nearly entire at the tip, about the length of the ovate-lanceolate scale. — *Muhl. in Willd. sp.* 4. *p.* 290; *Schk. Car. t.* Ooo. *f.* 151; *Muhl. gram. p.* 257; *Ell. sk.* 2. *p.* 552; *Dew. Car. l. c.* 10. *p.* 30; *Schwein. & Torr. Car. l. c. p.* 353; *Kunth, enum.* 2. *p.* 469. C. prasina, *Wahl. in act. Holm.* 1803. *p.* 161.

Culm 12 – 18 inches high, erect, slender, leafy below, nearly smooth. Leaves about two lines wide, as long as the culm. Sterile spike slender, somewhat clavate, 1 – 2 inches long, often bearing fertile flowers at the summit: scales oblong, loosely imbricated, mucronate, pale brown. Fertile spikes very constantly 3, somewhat approximate, 1 – 2 inches long; the flowers close except toward the base, where they are more or less distant: peduncles half an inch to an inch in length. Scales acuminate, pale with a green keel. Perigynium $1\frac{1}{2}$ line long, very thin and membranaceous, bright green, broadish below and tapering evenly to a short beak, which is minutely 2-toothed. Achenium ovoid-triquetrous, dull. Style continuous.

Wet meadows: frequent. *Fl.* May. *Fr.* June.

91. CAREX LACUSTRIS, *Willd.* *Lake Sedge.*

Sterile spikes 2 – 4; fertile 2 – 3, oblong-cylindrical, stout, erect, on short or scarcely exserted peduncles; perigynium narrowly oblong, many-nerved, smooth, somewhat beaked, 2-toothed at the summit, about as long as the oblong mucronate scale.—*Willd. sp.* 4. *p.* 306; *Schk. Car. t.* Ooo. *f.* 152; *Pursh, fl.* 1. *p.* 45; *Dew. Car. l. c.* 10. *p.* 43; *Schwein. & Torr. Car. l. c. p.* 369; *Kunth, enum.* 2. *p.* 489. C. riparia, *Muhl. gram. p.* 259; *Ell. sk.* 2. *p.* 554.

Culm 3 – 5 feet high, stout, sharply triquetrous, leafy, rough on the angles. Leaves 3 – 5 lines wide, keeled, somewhat glaucous. Sterile spikes commonly as many as three; terminal one 1 – 2 inches long; the others shorter, thick: scales oblong-lanceolate, obtuse or emarginate, mucronate. Fertile spikes distant, rarely four, 1 – 3 inches long and nearly half an inch in diameter, narrowed at the base, densely fruited; the uppermost one, and sometimes the others, bearing a few sterile flowers at the summit. Scales tapering to a long narrow rough point. Perigynium one fourth of an inch long, a little inflated, brown when old, gradually tapering into a sort of stout beak, the apex of which is furnished with two short thick and somewhat spreading teeth. Achenium obovoid, triquetrous, smoothish. Style continuous.

Deep swamps and borders of lakes: not rare. *Fl.* June. *Fr.* July. This species differs from *C. riparia*, chiefly in its narrower fruit. Prof. Dewey states that the true *C. riparia* occurs in New-York, but I have seen no specimens.

Order CXXV. GRAMINEÆ. *Juss.* The Grass Tribe.

Flowers in small spikelets, consisting of bracts or scales imbricated in 2 rows, the exterior of which (usually 2) are called *glumes*, and the two that immediately inclose the flower, *paleæ*. Calyx and corolla none, or reduced to minute *scales* or *lodiculæ*, which are usually 2 in number. Stamens mostly 3 : anthers versatile. Styles 2, sometimes united at the base : stigmas feathery. — Stems (*culms*) hollow, closed at the joints. Sheaths of the leaves split, or open on one side (very rarely entire), often furnished with a membranaceous appendage (ligule) on one side.

CONSPECTUS OF THE TRIBES AND GENERA.

Tribe 1. ORYZEÆ. Spikelets either one-flowered, with the glumes mostly abortive; or 2 – 3-flowered, one or both of the lower flowers with a single palea and neuter, the terminal one fertile. Paleæ somewhat coriaceous.— Flowers mostly hexandrous.

1. Leersia. Spikelets one-flowered. Glumes none. Paleæ 2, awnless.
2. Zizania. Monœcious. Spikelets one-flowered. Glumes none. Paleæ of the pistillate flowers awned, membranaceous.

Tribe 2. PHALARIDEÆ. Spikelets perfect, polygamous or rarely monœcious : either one-flowered, without a rudimentary stipe-like flower; or 2-flowered, the flowers perfect or sterile; or 2 – 3-flowered, the terminal flower perfect, the others incomplete. Paleæ mostly indurated in fruit.

3. Alopecurus. Spikelets one-flowered. Glumes 2, awnless, boat-shaped, united above the base. Upper palea wanting : lower one awned on the back.
4. Phleum. Spikelets one-flowered. Glumes distinct, boat-shaped. Paleæ awnless.
5. Phalaris. Spikelets 3-flowered, awnless; the 2 lower flowers scale-like; upper flower perfect. Glumes 2, keeled.
6. Holcus. Spikelets 2-flowered : glumes nearly equal; lower flower perfect, awnless; upper one staminate or neuter; the lower paleæ awned on the back.
7. Hierochloa. Spikelets 3-flowered; the two lower flowers staminate, triandrous, awned; uppermost flower diandrous, awnless.
8. Anthoxanthum. Spikelets 3-flowered; the two lower flowers neuter, each consisting of a single awned palea; upper flower perfect, awnless, diandrous.

Tribe 3. PANICEÆ. Spikelets 2-flowered; the lower flower incomplete, usually neuter. Glumes of thinner texture than the paleæ; the lower one often (rarely both) abortive. Paleæ more or less coriaceous, commonly awnless; the lower one concave.

9. Paspalum. Glume single. Lower flower neuter, of a single palea, membranaceous. Perfect flower of 2 awnless paleæ.— Flowers in spikes; the pedicels jointed.
10. Milium. Glume single. Lower flower neuter, of a single palea. Perfect flower awnless.— Flowers in a loose panicle; the pedicels not articulated.
11. Panicum. Spikelets naked : glumes 2, very unequal. Lower flower of one or two paleæ.
12. Pennisetum. Spikelets with an involucre of several distinct bristles, 2-flowered : glumes two, unequal. Lower flower of one or two paleæ.
13. Cenchrus. Spikelets enclosed in an indurated involucre, which is spiny or bristly externally. Glumes 2.

Tribe 4. STIPACEÆ. Spikelets one-flowered. Lower palea involute, with a simple or 3-cleft mostly twisted awn at the tip, indurated in fruit. Ovary stipitate.

14. Oryzopsis. Glumes 2, membranaceous, nearly equal, awnless. Paleæ coriaceous, equal in length : awn deciduous, straight. Scales linear, elongated. Stipe of the ovary short.

15. Stipa. Glumes 2, membranaceous, awnless, nearly equal. Paleæ coriaceous, involute : awn twisted. Scales shorter than the stipitate ovary.
16. Aristida. Glumes unequal, mostly awnless. Paleæ involute; the lower with a 3-parted awn at the tip.

Tribe 5. AGROSTIDEÆ. Spikelets one-flowered, rarely with another rudimentary flower. Glumes and paleæ 2, membranaceo-herbaceous; the lower palea often awned.

17. Muhlenbergia. Glumes unequal. Paleæ lanceolate, mostly hairy at the base; the lower one mucronate or awned at the tip.— Panicle more or less contracted.
18. Vilfa. Glumes unequal, not keeled. Paleæ not bearded; the lower one awnless.
19. Agrostis. Glumes unequal. Paleæ mostly shorter than the glumes : lower one commonly awned on the back; the upper one often minute.— Panicle diffuse.
20. Brachyelytrum. Glumes very minute. Lower palea with a long terminal awn; upper with a clavate rudimentary flower at the base.— Panicle racemose.

Tribe 6. ARUNDINACEÆ. Spikelets one-flowered, with a rudimentary flower; or many-flowered : the flowers usually with long hairs at the base. Glumes and paleæ 2, membranaceo-herbaceous.— Inflorescence paniculate.

21. Calamagrostis. Spikelets one-flowered, and sometimes furnished with a pencil-form rudiment. Paleæ surrounded with hairs at the base; the lower one usually with a short awn at the apex or on the back.
22. Ammophila. Paleæ shorter than the carinate glumes, surrounded with hairs at the base, awnless. Scales elongated.
23. Phragmites. Spikelets 3 – 6-flowered : flowers perfect, on villous pedicels, except the lowest, which is sessile, staminate, and naked at the base.

Tribe 7. CHLORIDEÆ. Spikes unilateral : spikelets one-flowered, or many-flowered with the upper flowers imperfect. Glumes and paleæ 2, herbaceo-membranaceous.

24. Eleusine. Spikes digitate or fasciculate. Spikelets sessile, 2 – 6-flowered : flowers awnless. Glumes carinate. Seed transversely rugose.
25. Spartina. Spikes disposed in a raceme, or remote and secund. Spikelets unilateral, closely imbricated in 2 rows. Glumes and paleæ carinate, compressed, awnless. Styles mostly united below.
26. Bouteloua. Spikes short, disposed in a unilateral raceme. Spikelets 2 – 3-flowered. Glumes carinate; the upper one much larger. Lower palea 3-toothed, or with 3 bristles at the summit.

Tribe 8. AVENACEÆ. Spikelets 2 – many-flowered; the terminal flower usually imperfect. Glumes and paleæ 2, herbaceo-membranaceous; the lower palea usually with a twisted awn on the back.

27. Aira. Spikelets 2 – 3-flowered. Lower palea 2 – 4-toothed, awned on the back.
28. Trisetum. Spikelets 2 – 4-flowered. Lower palea bicuspidate, with a twisted awn on the back below the cusps. Caryopsis not sulcate.
29. Avena. Spikelets several-flowered; the flowers remote. Lower palea awned on the back. Caryopsis longitudinally sulcate on the inside.
30. Arrhenatherum. Spikelets 2-flowered. Lower flower staminate, with the lower palea awned on the back. Upper flower perfect; the lower palea awnless, or with a short awn a little below the tip.
31. Danthonia. Spikelets 2 – 5-flowered. Glumes longer than the flowers (which are bearded at the base), cuspidate. Lower palea 2-toothed, with a twisted awn between the teeth.
32. Uralepis. Spikelets 3 – 4-flowered, somewhat terete. Glumes short. Paleæ unequal, villous on the margins : lower one tricuspidate, the central cusp produced into a short awn; the upper bicarinate and incurved.

Tribe 9. FESTUCACEÆ. Spikelets many-flowered (rarely few-flowered). Glumes and paleæ 2, membranaceo-herbaceous, rarely coriaceous : lower palea often with a short bristle. Inflorescence paniculate, sometimes contracted and spike-like.

33. Poa. Spikelets ovate, oblong or linear, compressed, 3 – many-flowered. Glumes shorter than the flowers. Paleæ awnless, usually membranaceous, often with a web-like pubescence at the base.
34. Glyceria. Spikelets terete, elongated, many-flowered. Paleæ awnless : upper one somewhat conduplicate. Scales collateral, connate. Stigmas decompound.
35. Dactylis. Spikelets aggregated into a unilateral head, many-flowered. Glumes and paleæ carinate, mucronate.

36. BROMUS. Spikelets oblong, distichous, many-flowered. Inferior palea 2-cleft, with a bristle between the teeth, a little below the tip. Caryopsis villous at the summit.

37. KŒLERIA. Spikelets 2 – 6-flowered, compressed. Glumes unequal. Paleæ unequal, membranaceous; the lower one pointless, or with a short awn at or below the tip.

38. FESTUCA. Spikelets often at first more or less terete, finally compressed, several-flowered: rachis jointed. Paleæ herbaceous; the lower one acute, mucronate or with a short awn at the tip, rounded on the back.

39. UNIOLA. Spikelets many-flowered, ancipital. Paleæ awnless; the lower one boat-shaped.

TRIBE I. *ORYZEÆ. Kunth.*

Spikelets either one-flowered, with the glumes mostly abortive; or 2 - 3-flowered, one or both of the lower flowers with a single palea and neuter, the terminal one fertile. Paleæ somewhat coriaceous. — Flowers often imperfect, mostly hexandrous.

1. LEERSIA. *Soland.; Endl. gen.* 728. *WHITE GRASS.*

[In honor of J. D. LEERS, a German botanist.]

Spikelets one-flowered, compressed. Glumes none. Paleæ two, awnless, closed, equal in length, but the lower one much broader, carinate. Stamens 3 – 6 (rarely solitary). — Swamp plants. Panicle simple or branched. Spikelets somewhat racemose and unilateral, on short pedicels.

1. LEERSIA ORYZOIDES, *Swartz.* *Cut-grass. White-grass.*

Panicle branched, diffuse, often sheathed at the base; spikelets somewhat spreading; flowers triandrous; paleæ strongly ciliate on the keel. — *Swartz, fl. Ind. occ.* 1. *p.* 132; *Ell. sk.* 1. *p.* 101; *Muhl. gram. p.* 58; *Torr. fl.* 1. *p.* 75; *Beck, bot. p.* 419; *Darlingt. fl. Cest. p.* 92; *Kunth, enum.* 1. *p.* 5. Phalaris oryzoides, *Linn. sp.* 1. *p.* 55. Asprella oryzoides, *Lam. ill. no.* 858; *Rœm. & Schult. syst.* 2. *p.* 266.

Rhizoma creeping, perennial. Culm 3 – 5 feet high, geniculate at the base. Leaves 2 – 3 lines wide, very rough with minute hooked prickles, as are also the sheaths. Ligule short, retuse. Panicle with widely spreading and flexuous branches. Flowers greenish white, oval-oblong. Glumes rough and dotted on the sides, lower one 3-nerved, upper one-nerved; the keel ciliate with small spines. Anthers linear, yellow. Styles 2, very short: stigmas feathered, white. Caryopsis oblong.

Ditches and swamps: common. August – September.

2. LEERSIA VIRGINICA, *Willd.* *Small-flowered White-grass.*

Panicle simple, the lower branches spreading; flowers appressed, monandrous, sparingly ciliate on the keel. — *Willd. sp.* 1. *p.* 325; *Ell. sk.* 1. *p.* 100; *Muhl. gram. p.* 59; *Torr. fl.* 1. *p.* 74; *Beck, bot. p.* 419; *Darlingt. fl. Cest. p.* 92; *Kunth, enum.* 1. *p.* 6. Asprella Virginica, *Rœm. & Schult. syst.* 2. *p.* 266.

Culm 2 – 4 feet high, slender, branching, geniculate, erect or decumbent. Leaves 2 – 3

lines wide, rough ; the sheaths deeply striate, and also somewhat rough with little prickles, rarely pubescent. Panicle much exserted ; the branches few and solitary. Flowers racemose, on short pedicels ; the glumes bent around and partly embracing the rachis, imbricated, covered with minute impressed dots ; the inferior one boat-shaped, acuminate ; the upper linear-lanceolate. Stigmas white. Caryopsis oblong.

Swamps and wet shady woods : less common than the preceding. *Fl.* August – September.

2. ZIZANIA. *Gronov. ; Endl. gen.* 732. *WILD RICE. WATER RICE.*

[An ancient Greek name for some Grass, supposed to be *Lolium perenne.*]

Monœcious. Spikelets one-flowered. STAMINATE : Glumes none, or only rudimentary. Paleæ herbaceo-membranaceous, awnless. Stamens 6. PISTILLATE : Glumes none. Paleæ herbaceo-membranaceous ; lower one oblong, keeled, terminating in a straight awn. Styles short : stigma pencil-form. — Tall marsh grasses, with a large terminal panicle. Flowers very caducous.

1. ZIZANIA AQUATICA, *Linn.* *Tuscarora Rice. Water Oats. Indian Rice.*

Lower branches of the panicle staminate, spreading ; upper branches erect, pistillate ; the spikelets on clavate pedicels ; awns elongated ; caryopsis slender, linear. — *Linn. sp.* 2. *p.* 991 ; *Lamb. in Linn. trans.* 7. *p.* 264. *t.* 13 ; *Pursh, fl.* 1. *p.* 60 ; *Ell. sk.* 2. *p.* 585 ; *Bigel. fl. Bost. p.* 344 ; *Beck, bot. p.* 419 ; *Darlingt. fl. Cest. p.* 93. Z. clavulosa, *Michx. fl.* 1. *p.* 75 ; *Willd. sp.* 4. *p.* 394 ; *Muhl. gram. p.* 270. Hydroporum esculentum, *Link,* "*hort. Berol.* 1. *p.* 252 ;" *Kunth, enum.* 1. *p.* 9.

Annual ? Culm 4 – 8 feet high, erect, terete, smooth. Leaves 2 – 3 feet long, and from half an inch to more than an inch wide, light green, smooth on both sides, rough on the margin. Panicle 10 – 18 inches long, loose, pyramidal, with verticillate branches ; the lower part spreading horizontally, and bearing staminate flowers ; the upper erect, or appressed and fertile. Sterile flowers pendulous ; the paleæ nearly equal in length, about half an inch long, purplish, a little hairy ; lower one 5-nerved, the upper 3-nerved. Stamens 6 : filaments short : anthers oblong, greenish yellow. Fertile flowers somewhat racemose, on upwardly thickened pedicels, about an inch long. Glumes none, or minute and connate, forming a little cup. Paleæ unequal, rough, purplish ; lower one longer, 3-nerved. Scales lanceolate. Caryopsis terete, about half an inch long, blackish when ripe, but white and farinaceous internally.

Swamps, and borders of rivulets and lakes ; in both fresh and brackish waters : frequent. *Fl.* August – September. *Fr.* October. The grain of this plant is a favorite article of food among the Indians, and cattle are very fond of the herbage. It might probably be cultivated to advantage for fodder, especially in large inundated tracts that are worth but little for any other purpose. *Z. fluitans*, of Michaux, as appears from his herbarium, was not found in Lake Champlain, as noticed by mistake in the *Flora Boreali-Americanæ*, but near Charleston, South-Carolina.

TRIBE II. *PHALARIDEÆ. Kunth.*

Spikelets perfect, polygamous or rarely monœcious : either one-flowered, with or without a rudimentary stipe-like flower; or 2-flowered, the flowers perfect or sterile; or 2 – 3-flowered, the terminal flower perfect, the others incomplete. Glumes mostly equal. Paleæ mostly shining, indurated in fruit.

3. ALOPECURUS. *Linn.; Endl. gen.* 747. *FOXTAIL GRASS.*

[From the Greek, *alopex*, a fox, and *oura*, a tail; in allusion to the form of the spike.]

Spikelets one-flowered. Glumes 2, boat-shaped and keeled, awnless, nearly equal, united at the base. Lower palea membranaceous, compressed, with the margins united below, awned on the back below the middle : upper palea wanting. Styles sometimes connate at the base. — Flowers in a dense cylindrical terminal spiked panicle.

1. ALOPECURUS PRATENSIS, *Linn.* *Common Foxtail Grass.*

Culm erect, smooth ; spike cylindrical, obtuse ; glumes connate below the middle, lanceolate, acute, somewhat hairy, as long as the palea. — *Linn. sp.* 1. *p.* 60 ; *Engl. bot. t.* 759 ; *Pursh, fl.* 1. *p.* 65 ; *Muhl. gram. p.* 80 ; *Torr. fl.* 1. *p.* 97 ; *Trin. gram. uni.- et sesq.-fl. p.* 142 ; *Kunth, enum.* 1. *p.* 24.

Perennial. Culm about 2 feet high, terete, smooth. Leaves smooth, flat. Ligule ovate. Spike (or rather compact panicle) 1 – 2 inches long, of a yellowish green color ; the flowers crowded on short branches. Glumes and palea hairy and strongly ciliate. Awn about twice the length of the flower, twisted.

Fields and pastures : rare. *Fl.* June – July. Doubtless introduced from Europe.

2. ALOPECURUS GENICULATUS, *Linn.* *Water Foxtail Grass.*

Culm ascending, geniculate at the base ; spike cylindrical, obtuse ; glumes connate at the base, hairy, obtuse ; awn twice as long as the flower.—*Linn. sp.* 1. *p.* 60 ; *Engl. bot. t.* 1250; *Pursh, fl.* 1. *p.* 65 ; *Muhl. gram. p.* 80 ; *Ell. sk.* 1. *p.* 111 ; *Torr. fl.* 1. *p.* 97 ; *Trin. gram. uni.- et sesq -fl. p.* 140, *and icon. gram.* 4. *t.* 42 ; *Kunth, enum.* 1. *p.* 24.

var. *aristulatus :* awn scarcely as long as the flower.— *Torr. l. c.* A. aristulatus, *Michx. fl.* 1. *p.* 43. A. subaristatus, *Pers. syn.* 1. *p.* 80 ; *Nutt. gen.* 1. *p.* 52. A. fulvus, *Smith in Engl. bot. t.* 1467 ?

Rhizoma creeping. Culm 12 – 18 inches high, geniculate and rooting below, terete, smooth. Leaves 2 – 3 inches long, pale green, smooth and flat ; the sheaths a little inflated : ligule elongated. Spike 1 – 2 inches long, slender. Flowers ovate, flat. Glumes very villous on the margin, and fringed on the keel. Palea smoothish, as long as the glumes ; the awn arising from below the middle. Stamens 3 : anthers oblong, pale yellow. Styles a little connate at the base : stigmas plumose. Scales collateral, lanceolate, very minute.

Wet meadows : rather frequent, particularly the short-awned variety. *Fl.* June. I find no constant difference between *A. geniculatus* and *A. aristulatus ;* even in the length of the awn.

4. PHLEUM. *Linn.; Endl. gen.* 750. CAT-TAIL GRASS.

[An ancient Greek name, originally applied, it is thought, to TYPHA.]

Glumes much longer than the paleæ, distinct, equal, boat-shaped, beaked or mucronate. Paleæ awnless, truncate. — Panicle spiked, dense, cylindrical.

1. PHLEUM PRATENSE, *Linn.* *Timothy. Herd's-grass.*

Spike cylindrical; glumes mucronate-awned, ciliate on the keel, longer than the awn. — *Linn. sp.* 1. *p.* 59; *Engl. bot. t.* 1076; *Pursh, fl.* 1. *p.* 65; *Ell. sk.* 1. *p.* 110; *Muhl. gram. p.* 82; *Torr. fl.* 1. *p.* 98; *Trin. diss.* 1. *p.* 149; *Darlingt. fl. Cest. p.* 59; *Kunth, enum.* 1. *p.* 29.

Root perennial, fibrous or sometimes tuberous. Culm 2 – 3 feet high, smooth. Leaves flat, 3 – 4 lines wide, smooth and glaucous: ligule ovate. Spike 3 – 6 inches long, green. Glumes 3-nerved, fringed with white hairs on the keel. Paleæ concealed in the base of the glumes; the lower one larger, 5-nerved. Stamens 3: anthers purple. Caryopsis oblong, compressed.

Fields and pastures. *Fl.* June – August. Introduced from Europe. This is a well known and most valuable grass, and makes the best kind of hay.

5. PHALARIS. *Linn.; Endl. gen.* 753. CANARY GRASS.

[From the Greek, *phalos*, shining; the coriaceous paleæ being smooth and polished.]

Spikelets 3-flowered; the two inferior flowers scale-like and minute; upper flower perfect. Glumes 2, nearly equal, membranaceous, gibbous on the back, keeled, awnless. Paleæ 2, finally coriaceous, shorter than the glumes, awnless; the upper one surrounded by the lower. Caryopsis oblong, lenticular, closely covered with the smooth coriaceous paleæ. — Panicles dense and spike-like.

1. PHALARIS ARUNDINACEA, *Linn.* *Reed Canary Grass.*

Panicle ovoid, a little spreading when old; glumes boat-shaped, obtusely keeled; abortive flowers resembling 2 small exterior glumes, hairy.—*Linn. sp.* 1. *p.* 55; *Michx. fl.* 1. *p.* 43; *Pursh, fl.* 1. *p.* 65; *Muhl. gram. p.* 89; *Trin. gram. Pan. p.* 256; *Darlingt. fl. Cest. p.* 63; *Kunth, enum.* 1. *p.* 33. P. Americana, *Torr. fl.* 1. *p.* 100; *Beck, bot. p.* 392, not of *Ell.* Calamagrostis colorata, *Nutt. gen.* 1. *p.* 46.

Perennial. Culm 2 – 4 feet high, erect, smooth. Leaves 3 – 4 lines wide, smooth, with a rough margin. Ligule ovate. Neuter flowers resembling exterior glumes, linear, villous. Panicle 2 – 4 inches long. Glumes compressed towards the tip, 3-nerved; lower one fringed on the margin below the middle; upper one smooth. Paleæ a little shorter than the glumes, clothed with appressed hairs; the inferior ovate, superior lanceolate. Stamens 3: anthers linear, yellow. Scales ovate, entire. Caryopsis oblong, black.

Swamps and wet borders of streams: frequent. *Fl.* July. A native also of Europe. The *Ribbon-grass* of the gardens is a variety of this species.

2. PHALARIS CANARIENSIS, *Linn.* *Common Canary Grass.*

Panicle spike-like, oval ; glumes boat-shaped, entire at the point ; paleæ hairy ; glumes of the abortive flowers smooth. — *Linn. sp.* 1. *p.* 54 ; *Engl. bot. t.* 1310 ; *Torr. fl.* 1. *p.* 100 ; *Trin. gram. Pan. p.* 254 ; *Kunth, enum.* 1. *p.* 31.

Annual. Culm 1½ – 2 feet high, simple, smooth. Leaves 4 – 5 lines wide, pale green and glaucous ; the sheaths somewhat inflated. Glumes nearly twice as long as the paleæ, yellowish green, strongly keeled. Paleæ smooth, lanceolate, acute. Abortive flowers very small, entire. Caryopsis ovate, invested with the hardened shining paleæ.

Waste places, and about habitations : introduced from Europe. *Fl.* July – September.

6. HOLCUS. *Linn. ; Endl. gen.* 754. *SOFT-GRASS.*

[Said to be from *holko*, to extract ; because of its supposed virtue in drawing out thorns.]

Spikelets 2-flowered, polygamous. Glumes membranaceous, somewhat boat-shaped, mucronate. Lower flower perfect, awnless : upper one staminate or neuter, pedicellate ; the lower palea awned on the back above the middle. — Panicle contracted.

1. HOLCUS LANATUS, *Linn.* *Meadow Soft-grass.*

Panicle equal ; flowers shorter than the rather obtuse mucronate glumes, upper one with a curved awn ; root fibrous.—*Linn. sp.* 2. *p.* 1047 ; *Engl. bot. t.* 1170 ; *Muhl. gram. p.* 274 ; *Torr. fl.* 1. *p.* 151 ; *Bigel. fl. Bost. p.* 44 ; *Beck, bot. p.* 404 ; *Darlingt. fl. Cest. p.* 91 ; *Kunth, enum.* 1. *p.* 35.

Whole plant clothed with a soft whitish down. Root perennial. Culm 1 – 2 feet high. Leaves flat, 3 – 5 lines wide ; the ligule short and truncate. Panicle more or less contracted. Glumes whitish or tinged with purple, pubescent, ciliate on the keel. Flowers pedicellate. Paleæ smooth and shining ; the lower one keeled. Awn of the staminate flower curved or hooked.

Moist meadows : frequent. *Fl.* June. Introduced from Europe, and now thoroughly naturalized in many places. A grass of but little value.

7. HIEROCHLOA. *Gmel.* *HOLY-GRASS.*

[From the Greek, *hieros*, sacred, and *chloa*, grass ; because, in Prussia, it is used in certain religious festivals.]

Spikelets 3-flowered : the two lower flowers staminate, triandrous and mostly awned ; the uppermost one perfect, diandrous, awnless.— Smooth perennial grasses, having the odor of vanilla. Flowers in open or contracted panicles : spikelets pedicellate.

1. HIEROCHLOA BOREALIS, *Rœm. & Schult.* *Seneca Grass. Vanilla Grass.*

Panicle somewhat one-sided, a little spreading ; peduncles smooth ; perfect flower pointless ;

staminate flowers slightly awned ; root creeping. — *Rœm. & Schult. syst.* 2. *p.* 513 ; *Torr. fl.* 1. *p.* 150 ; *Beck, bot. p.* 404 ; *Hook. fl. Bor-Am.* 2. *p.* 234 ; *Kunth, enum.* 1. *p.* 36. H. repens, *P. de Beauv. agrost. p.* 62. H. fragrans, *Rœm. & Schult. l. c.* ; *Kunth, l. c.* Holcus odoratus, *Linn. sp.* 2. *p.* 1047 ; *Michx. fl.* 1. *p.* 56 ; *Muhl. gram. p.* 273 ; *Bigel. fl. Bost. p.* 44.

Rhizoma creeping extensively. Culm 12 – 18 inches high, erect, simple. Leaves smooth and shining ; the radical ones very long ; those of the culm short : ligule lanceolate. Panicle few-flowered, 2 – 3 inches long, pyramidal, finally spreading ; the primary branches in pairs or solitary : branchlets flexuous. Spikelets broadly ovate, tumid, yellowish brown and purple. Glumes mostly a little longer than the flowers, ovate, acuminate, smooth, 3-nerved, purplish towards the base. Lower palea of the staminate flowers ovate-oblong, hairy, strongly ciliate on the margin, 5-nerved, the middle nerve produced into a point or short bristle : upper palea a little longer, lanceolate, bifid. Perfect flower resembling the lateral ones in texture : lower palea smooth on the sides and margin, villous at the tip.

Boggy meadows, Long Island, &c. Flowers early in May. This remarkably sweet-scented grass is abundant also in the northern parts of Europe. In some parts of the Prussian dominions it is dedicated to the Virgin Mary, and strewed before the doors of the churches on festival days. In this country, it is often collected and placed in draws to scent clothes.

2. HIEROCHLOA ALPINA, *Rœm. & Schult.* *Alpine Holy-grass.*

Panicle ovate, contracted ; spikelets oblong, compressed, longer than the pedicels ; glumes lanceolate, almost nerveless ; lateral flowers obtuse, awned on the back. — *Rœm. & Schult. syst.* 2. *p.* 515 ; *Torr. fl.* 1. *p.* 150 ; *Hook. fl. Bor.-Am.* 2. *p.* 234 ; *Kunth, enum.* 1. *p.* 36. Holcus alpinus, *Wahl. fl. Lapp. p.* 31. *t.* 2 ; *Bigel. fl. Bost. p.* 45.

Culm 6 – 12 inches high, erect, straight. Leaves 2 – 3 lines wide ; those of the culm short. Panicle 1 – 2 inches long ; the branches mostly in pairs, rather stout, each bearing 2 – 3 spikelets which are larger than those of the preceding species, shining, brown tinged with purple. Glumes rather obtuse, thin and membranaceous. Staminate flowers slightly hairy, the paleæ eroded at the point ; the upper one bicarinate and folded within the lower, bifid and hairy at the tip : awn of the lower flower one third the length of the paleæ ; of the upper flower, longer than the paleæ. Anthers linear. Perfect flower with nearly equal paleæ ; the lower palea mucronate at the tip.

Summit of Mount Marcy, and some other of the highest mountains of Essex county. *Fl.* End of June. A rare species, inhabiting the arctic regions of America, Europe and Asia.

8. ANTHOXANTHUM. *Linn. ; Endl. gen.* 756. *VERNAL GRASS.*

[From the Greek, *anthos*, a flower, and *xanthos*, yellow.]

Spikelets 3-flowered ; the two lower flowers neuter, and each consisting of a single awned palea ; the upper flower perfect, of 2 paleæ, awnless and diandrous. — Aromatic grasses, with fibrous roots and contracted panicles.

1. ANTHOXANTHUM ODORATUM, *Linn.* *Sweet-scented Vernal-grass.*

Panicle ovoid-oblong ; flowers pubescent, shorter than the awns. — *Linn. sp.* 1. *p.* 40 ; *Engl. bot. t.* 617 ; *Michx. fl.* 1. *p.* 39 ; *Pursh, fl.* 1. *p.* 65 ; *Muhl. gram. p.* 2 ; *Ell. sk.* 1. *p.* 37 ; *Torr. fl.* 1. *p.* 101 ; *Kunth, enum.* 1. *p.* 38.

Root perennial, fibrous. Culm 12 – 18 inches high, erect, slender. Leaves more or less pubescent ; the ligule membranaceous, elongated. Panicle usually contracted and almost spiked, but in shady places loose and open ; the flowers somewhat fascicled on the short branches. Glumes unequal, membranaceous, pubescent ; the inferior shorter and broader. One of the neuter flowers with a geniculate awn at the base, of the length of the palea ; the other with a shorter straight awn a little below the tip. Styles 2, short : stigmas elongated, white, plumose. Caryopsis oblong, black and shining.

Meadows, fields, and dry open woods : very common. *Fl.* May August. Introduced from Europe, but perfectly naturalized. This grass is well known for its fine perfume when partially dry.

TRIBE III. *PANICEÆ. Kunth.*

Spikelets 2-flowered ; the lower flower incomplete, usually neuter (rarely staminate). Glumes of thinner texture than the paleæ ; the lower one often (and rarely both) abortive. Paleæ more or less coriaceous, commonly awnless ; the lower one concave.

9. PASPALUM. *Linn. ; Endl. gen.* 761. *PASPALUM.*

[From *paspalos*, the Greek word for millet ; in allusion to the form of the grain]

Spikelets 2-flowered, the glume single : lower flower neuter, of a single palea, membranaceous, awnless, as long as the glume. Perfect flowers with two coriaceous awnless paleæ ; the lower concave, and embracing the upper one. Stamens 3. — Flowers in unilateral linear spikes, plano-convex ; the rachis not jointed : pedicels articulated.

1. PASPALUM LÆVE, *Michx.* *Smooth Erect Paspalum.*

Culm erect, smooth, rather stout ; leaves usually smooth, hairy at the base (and sometimes also the lower sheaths a little hairy) ; spikes 3 – 6, alternate ; spikelets in two rows, ovate-orbicular, smooth. — *Michx. fl.* 1. *p.* 44 ; *Ell. sk.* 1. *p.* 106 ; *Muhl. gram. p.* 98 ; *Torr. fl.* 1. *p.* 76 ; *Darlingt. fl. Cest. p.* 43 ; *Kunth, enum.* 1. *p.* 53 ; *Trin. Pan. gen. l. c. p.* 160.

Perennial. Culm 1½ – 3 feet high, simple. Leaves 3 – 5 lines wide, deep green. Spikes usually 3 or 4 (sometimes only two), 2 – 3 inches long, spreading horizontally ; the rachis flexuous, flat on the back, about half a line wide. Spikelets one on each pedicel, nearly orbicular, 1¼ line long, smooth or nearly so. Glume and palea of the neuter flower strongly one-nerved, even. Paleæ of the perfect flower minutely dotted in lines.

Moist grassy banks and meadows, Long Island, &c. *Fl.* August. Quite a variable species as respects the degree of smoothness or pubescence, but easily distinguished from the following by its more numerous spikes and much larger spikelets.

2. PASPALUM SETACEUM, *Michx.* *Hairy Slender Paspalum.*

Culm erect or decumbent, slender; leaves and sheaths hairy; spikes mostly two, one of them on a long, the other on a short peduncle from the same sheath; spikelets in two rows. — *Michx. fl.* 1. *p.* 43; *Ell. sk.* 1. *p.* 104; *Torr. fl.* 1. *p.* 76; *Beck, bot. p.* 399; *Kunth, enum.* 1. *p.* 55 (excl. syn. P. ciliatifolium, *Michx.*); *Darlingt. fl. Cest. p.* 43; *Trin. Pan. gen. p.* 55. P. pubescens, *Muhl. gram. p.* 92. P. ciliatifolium, *Torr. l. c.; Gray, Gram. & Cyp.* 1. *no.* 24, not of *Michx.* P. debile, *Michx. l. c.*

Perennial. Culm mostly prostrate, 1 – 2 feet long, smoothish. Leaves about 2 lines wide, commonly very hairy, and ciliate on the margin. Peduncle of the terminal spike 2 – 6 inches long, arising from the uppermost sheath. From the same sheath usually proceeds another spike, on a much shorter peduncle, but sometimes it is only partially or not at all exserted. Rachis very narrow, convex on the back, hairy at the base. Spikelets two, on a short forked pedicel which is closely appressed to the rachis, less than a line in length. Glume and paleæ of the neuter flower orbicular-ovate. Perfect flower as long as the glume, very smooth and shining.

Sandy fields: common. August September.

10. MILIUM. *Linn.; Endl. gen.* 762. *MILLET GRASS.*

[Said to be from *mille*, a thousand; because of its fertility.]

Spikelets 2-flowered. Glume single, membranaceous, concave. Lower flower neuter, and consisting of a single palea resembling the glume: upper flower perfect, the paleæ awnless: lower palea concave, and embracing the upper. Stamens 3. — Panicle branched, diffuse. Spikelets pedicellate; the pedicels not articulated.

1. MILIUM EFFUSUM, *Linn.* *Millet Grass.*

Panicle widely diffuse, compound; glumes ovate, very obtuse; leaves flat, smooth; root perennial. — *Linn. sp.* 1. *p.* 61; *Engl. bot. t.* 1106; *Muhl. cat. p.* 9; *Torr. fl.* 1. *p.* 77; *Trin. diss. p.* 246, & *Pan. gen. in mem. acad. St. Petersb.* (ser. 6.) *p.* 120; *Kunth, enum.* 1. *p.* 66.

Rhizoma creeping. Culm 3 – 6 feet high, erect, simple, smooth. Leaves 8 – 12 inches long and nearly half an inch wide, smooth underneath, roughish above: ligule oblong. Panicle oblong, 6 – 10 inches long; the lower branches clustered; upper ones opposite. Flowers rather few, and scattered. Glumes roughish, obscurely 3-nerved. Paleæ nearly equal, rather acute. Scales ovate-lanceolate, entire.

Mountain meadows, and borders of streams, northern and western counties: frequent. July – August. Our plant seems to be identical with the *M. effusum* of Europe.

11. PANICUM. *Linn.* (in part); *Endl. gen.* 770 (including OPLISMENUS). *PANIC-GRASS.*

[Said to be derived from *panis*, bread, the grain of some species being used for food]

Spikelets 2-flowered, naked; the flowers with or without awns. Glumes 2, mostly very unequal, membranaceous, concave. Lower flower of one or two paleæ, staminate or neuter, membranaceous. Upper flower perfect; the paleæ 2, coriaceous, nearly equal, concave. Stamens 3. — Grasses of various habit; the inflorescence mostly paniculate or spiked: rachis not jointed.

* DIGITARIA, Scop. *Spikes linear, unilateral, digitate, fasciculate or paniculate: flowers not awned.*

1. PANICUM SANGUINALE, *Linn.* (Plate CXLVI.) *Common Crab-grass.*

Spikes digitate, erect-spreading; leaves and sheaths somewhat hairy; spikelets oblong; flowers pubescent on the margin. — *Linn. sp.* 1. *p.* 57; *Engl. bot. t.* 849; *Bigel. fl. Bost. p.* 41; *Trin. gram. Pan. p.* 78, *and ic. t.* 93 & 94; *Kunth, enum.* 1. *p.* 82. Digitaria sanguinalis, *Scopol.*; *Michx. fl.* 1. *p.* 45; *Pursh, fl.* 1. *p.* 69; *Muhl. gram. p.* 120; *Ell. sk.* 1. *p.* 121; *Torr. fl.* 1. *p.* 154; *Beck, bot. p.* 398; *Darlingt. fl. Cest. p.* 44. Syntherisma præcox, *Walt. fl. Car. p.* 76.

Annual. Culm 1 – 2 feet long, assurgent or decumbent, branching at the base and rooting at the lower joints. Leaves often undulate on the margin. Spikes 4 – 6, or sometimes more: rachis flexuous. Spikelets in pairs, on short peduncles, arranged in two rows on one side of a very narrow flexuous rachis, to which they are closely appressed: inferior spikelet almost sessile. Lower glume very minute; the upper lanceolate, acute. Abortive flower without any trace of a superior palea: inferior palea much longer than the glume. Perfect flower very smooth, nearly orbicular.

Cultivated grounds, sandy fields, etc.: very common. *Fl.* August October. A troublesome weed in gardens, and doubtless a naturalized foreigner.

2. PANICUM GLABRUM, *Gaud.* *Smooth Crab-grass.*

Spikes digitate, somewhat alternate (3 – 4), spreading; leaves and sheaths smooth; spikelets ovoid, crowded; inferior glume almost wanting, superior as long as the abortive flower, the two latter hairy.—"*Gaud. Agrost.* 1. *p.* 22;" *Trin. diss.* 2. *p.* 83, *ic. gram.* 13. *t.* 149, *and Pan. gen. l. c. p.* 203; *Kunth, enum* 1. *p.* 83. Digitaria glabra, *Roem. & Schult. syst.* 2. *p.* 471; *Torr. fl.* 1. *p.* 154, excl. syn. *Michx.* D. humifusa, *Pers. syn.* 1. *p.* 85. D. Ischæmum, *Schreb.*; *Muhl. gram. p.* 121.

Annual. Culm about a foot long, mostly decumbent, rarely rooting at the joints. Leaves sometimes with a few hairs on the upper surface. Spikes mostly 3, about two inches long. Lower glume wanting. Palea of the abortive flower 5-nerved, hairy. Perfect flower smooth: paleæ finely striate.

Sandy fields: not rare. *Fl.* Aug.– September. Perhaps introduced from Europe: certainly identical with the foreign plant. The lower glume is extremely minute, and easily overlooked.

3. PANICUM FILIFORME, *Linn.* (Plate CXLVII.) *Slender Crab-grass.*

Culm filiform, erect; lower sheaths very hairy; spikes 2 – 4, filiform, alternate and approximate, rather loosely flowered; spikelets in twos and threes, all of them pedicellate, elliptical-oblong, acute, pubescent; lower glume wanting; perfect flower as long as the lower glume.—*Linn. sp.* 1. *p.* 57; *Trin. diss.* 2. *p.* 54, *ic.* 13. *t.* 148, *and Pan. gram. l. c. p.* 204. Digitaria filiformis, *Beauv.; Muhl. gram. p.* 131; *Ell. sk.* 1. *p.* 132; *Torr. fl.* 1. *p.* 155; *Beck, bot. p.* 398; *Darlingt. fl. Cest. p.* 44. Paspalum filiforme, "*Flügge, mon. Pasp. p.* 145;" *Kunth, enum.* 1. *p.* 46, excl. syn. *Swartz.*

Annual. Culm 1 – 2 feet high, extremely slender, smooth. Leaves 1 – 2 inches long, smooth underneath, sometimes a little hairy above: upper sheaths smooth; the lower ones sparsely clothed with slender spreading hairs. Spikes mostly 2 or 3, sometimes 4, an inch or two in length; the rachis very narrow and flexuous. Pedicels divided to the base, bearing 2 – 3 spikelets, which are about three fourths of a line long. No trace of an inferior glume; the superior a little shorter than the palea of the neuter flower. Perfect flower with the paleæ finely striate, nearly black at maturity.

Dry sandy soils: frequent. *Fl.* August. In the absence of the outer glume, this plant resembles PASPALUM; but on account of its habit, I have retained it in the subgenus DIGITARIA.

** ECHINOCHLOA, Beauv. *Lower flower of the spikelets staminate or neuter. Glumes (unequal) and lower palea of the staminate flower awned or mucronate.— Spikelets disposed in spikes, which are usually paniculate.*

4. PANICUM CRUS-GALLI, *Linn.* *Barnyard Grass.*

Spikes alternate and in pairs, simple or compound, the spikelets imbricated; glumes and lower palea of the neuter flower hispid, awned or mucronate; rachis bristly; sheaths smooth. — *Linn. sp.* 1. *p.* 156; *Engl. bot. t.* 876; *Michx. fl.* 1. *p.* 46; *Bigel. fl. Bost. p.* 40; *Pursh, fl.* 1. *p.* 66; *Muhl. gram. p.* 105; *Ell. sk.* 1. *p.* 114; *Trin. diss.* 2. *p.* 135; *Torr. fl.* 1. *p.* 140; *Darlingt. fl. Cest. p.* 49. Echinochloa, *Beauv. Agrost. p.* 53. Oplismenus Crus-galli, *Kunth, enum.* 1. *p.* 143; *Hook. fl. Bor.-Am.* 2. *p.* 236.

var. *hispidum:* sheaths hispid; awns very long.—*Ell. sk.* 1. *p.* 114. P. hispidum, *Muhl. gram. p.* 107; *Torr. fl.* 1. *p.* 141. P. Walteri, *Pursh, fl.* 1. *p.* 66 (not of *Muhl. and Ell.*). P. muriatum, *Michx. fl.* 1. *p.* 47? Oplismenus muricatus, *Kunth, l. c.; Hook. l. c.*

Annual. Culm 2 – 4 feet high, stout, erect or somewhat procumbent. Leaves half an inch or more in breadth. Panicle dense, pyramidal; the spikelets crowded in dense spike-form racemes. Glumes acute; the awn variable in length, and sometimes wanting. Outer palea of the neuter flower usually awned. Perfect flowers smooth and coriaceous.

Wet places, and about barnyards: common; the rough-sheathed variety along ditches near the salt water. *Fl.* August – September.

**** Spikelets scattered, in loose panicles.*

5. PANICUM VIRGATUM, *Linn.* *Tall Smooth Panic-grass.*

Whole plant very smooth ; panicle diffuse, very large ; spikelets scattered ; flowers acuminate, the lower one staminate, with two nearly equal paleæ. — *Linn. sp.* 1. *p.* 59 ; *Michx. fl.* 1. *p.* 48 ; *Muhl. gram. p.* 120 ; *Ell. sk.* 1. *p.* 120 ; *Torr. fl.* 1. *p.* 147 ; *Trin. diss.* 2. *p.* 190, *and ic. gram. t.* 228 ; *Kunth, enum.* 1. *p.* 100 ; *Beck, bot. p.* 396 ; *Darlingt. fl. Cest. p.* 45.

Perennial. Culm 3 – 5 feet high. Leaves very long, flat, of a yellowish tinge when old. Panicle at first erect, finally spreading, often a foot or more in length. Spikelets nearly two lines long ; the flowers a little diverging. Glumes acuminate ; the lower one nearly two thirds the length of the upper. Sterile flower usually bearing three well-formed stamens, with large purple anthers ; the upper palea herbaceous. Perfect flower very smooth ; the stigmas purple. Scales very short.

Wet sandy banks and islands, particularly near the salt water ; sometimes found in rather dry soils : frequent. *Fl.* August. This species beautifully illustrates the true structure of the flowers in PANICUM and other allied genera. The lower flower of the spikelet, instead of being rudimentary or very imperfect, is here well developed, being furnished with two nearly equal paleæ and three perfect stamens : the inferior glume, also, is larger than usual in this genus.

6. PANICUM LATIFOLIUM, *Linn.* *Broad-leaved Panic-grass.*

Culm mostly simple, retrorsely bearded at the joints ; leaves oblong-lanceolate, smooth, or, with the sheaths, more or less pubescent ; panicle terminal, a little exserted, nearly simple, pubescent ; spikelets (large) oblong-ovoid ; lower flower staminate, of 2 paleæ ; the upper palea somewhat herbaceous, nearly as long as the lower, acute.—*Linn. sp.* 1. *p.* 59 ; *Michx. fl.* 1. *p.* 49 ; *Pursh, fl.* 1. *p.* 68 ; *Ell. sk.* 1. *p.* 119 ; *Muhl. gram. p.* 109 ; *Torr. fl.* 1. *p.* 142 ; *Trin. diss.* 2. *p.* 207 ? *and Pan. gen. l. c. p.* 262 ; *Kunth, enum.* 1. *p.* 117 ; *Beck, bot. p.* 394 ; *Darlingt. fl. Cest. p.* 47. P. Walteri, *Poir. enc. suppl.* 4. *p.* 282 ; *Kunth, l. c.*

Root perennial, fibrous. Culm 1 – 2 feet high, simple or somewhat branching. Leaves 3 – 4 inches long and an inch or more in breadth, cordate and clasping at the base, commonly smooth but often hairy, spreading horizontally : sheaths about half the length of the internodes, ciliate at the throat or on the entire margin, often pubescent. Panicle about 2 inches long, bearing usually but few spikelets, which are about a line and a half long ; the branches clothed with a short soft pubescence. Lower glume ovate, loose ; upper one strongly nerved. Lower flower with 3 perfect stamens. Perfect flower acute.

Woods and moist thickets : frequent. *Fl.* June.

7. PANICUM CLANDESTINUM, *Linn.* *Hidden-flowered Panic-grass.*

Culm with short axillary branches, the nodes smooth; leaves broadly lanceolate, somewhat cordate at the base, the sheaths hispid, enclosing the short lateral panicles; spikelets ovoid (large), pubescent, the lower flower neuter, with 2 paleæ.—*Linn. sp.* 1. *p.* 58; *Muhl. gram. p.* 110; *Torr. fl.* 1. *p.* 141; *Trin. diss.* 1. *p.* 223; *Kunth, enum.* 1. *p.* 117; *Beck, bot. p.* 394; *Darlingt. fl. Cest. p.* 48. P. latifolium, *var.* clandestinum, *Pursh, fl.* 1. *p.* 68.

var. *pedunculatum*: sheaths less hispid; terminal panicle on a long peduncle. P. pedunculatum, *Torr. l. c.*

Root perennial, fibrous. Culm 1 – 3 feet high, erect, rigid, very leafy; the branches appressed. Leaves 3 – 6 inches long and an inch or more in breadth, spreading, strongly nerved, smooth or slightly hairy above. Sheaths hispid with horizontal hairs, which arise from little papillæ between the striæ. Panicles few-flowered, terminal and lateral; the former either wholly concealed or partly exserted, sometimes on a long peduncle. Glumes rather acute. Lower flower with inferior palea resembling the glumes: upper palea membranaceous, oblong, obtuse, about two thirds the length of the lower one. Perfect flower triandrous; the anthers purple. Stigmas large, plumose, purple. Paleæ ovoid, white and shining.

Moist thickets: frequent. *Fl.* July – August.

8. PANICUM XANTHOPHYSUM, *Gray.* (Plate CXLVI.) *Yellow Panic-grass.*

Culm simple or branching from the base, erect; leaves lanceolate, strongly nerved, smooth (except the ciliate base), the sheaths hairy; panicle nearly simple, few-flowered, the branches erect and smoothish; spikelets globose-obovate, pubescent, the inferior glume about one third the length of the superior; lower flower staminate, of 2 paleæ, as long as the obovate perfect flower. — *Gray, Gram. & Cyp. part* 1. *no.* 28, *and in ann. lyc. N. York,* 3. *p.* 234; *Hook. fl. Bor.-Am.* 2. *p.* 235.

Perennial. Whole plant light green, becoming yellowish in drying. Culm 12 – 15 inches high, slender, smooth. Leaves 3 – 6 inches long, 4 – 6 lines broad, very acute. Panicle on a long naked slender peduncle; the branches a little rough but not pubescent, erect or appressed. Spikelets about a line and a half long. Lower glume acute: upper one obtuse, 9-nerved. Lower flower with the upper palea membranaceous, and shorter than the lower one. Perfect flower cartilaginous, smooth and shining, as long as the upper glume.

Dry pine plains near Oneida lake, and Hamilton, Madison county (*Dr. J. S. Douglas, Dr. Gray,* and *Dr. Knieskern*). *Fl.* June and July.

9. PANICUM CAPILLARE, *Linn.* *Hair-stalked Panic-grass.*

Culm erect, straight, the sheaths hairy; panicle large, capillary, expanding, loose; spikelets on long peduncles, acuminate, smooth; abortive flower without an upper palea. — *Linn.*

sp. 1. *p.* 58; *Michx. fl.* 1. *p.* 47; *Pursh, fl.* 1. *p.* 67; *Muhl. gram. p.* 124; *Torr. fl.* 1. *p.* 149; *Trin. diss.* 2. *p.* 215, *and Pan. gram. l. c. p.* 291; *Beck, bot. p.* 396; *Darlingt. fl. Cest. p.* 45; *Kunth, enum.* 1. *p.* 114. P. strigosum, *Ell. sk.* 1. *p.* 126?

Annual. Culm 1 – 2 feet high, often branching at the base, and forming a tuft. Leaves flat, 2 – 5 lines wide, hairy; the sheaths clothed with rigid spreading hairs. Panicle pyramidal, with slender straight branches which are somewhat diffracted when old. Spikelets scarcely more than half a line long. Glumes often purplish. Perfect flower much shorter than the neuter one, ovate.

Sandy soils: common in cultivated grounds. *Fl.* August – September. When it grows in dry woods, it is much more slender, and the leaves narrower. Late in the autumn, as remarked by Dr. Darlington, "the dry culms break off, and the divaricate panicles are rolled over the fields by the winds, until they accumulate in great quantities along fences and hedges."

10. PANICUM DEPAUPERATUM, *Muhl.* *Few-flowered Panic-grass.*

Culms cespitose, erect, mostly simple, hairy; leaves narrowly linear, hairy underneath; sheaths hispid (rarely smooth); panicle nearly simple, on a long peduncle, few-flowered, the branches flexuous; spikelets (middle-sized) obovate, pedicellate, rather acute, smoothish; glumes striate, acute; lower glume ovate, a little distant, one third the length of the upper one; upper palea of the neuter flower very small.—*Muhl. gram. p.* 112; *Torr. fl.* 1. *p.* 144; *Kunth, enum.* 1. *p.* 107, not of *Trin.* P. rectum, *Rœm. & Schult. syst.* 2. *p.* 457; *Torr. l. c.; Beck, bot. p.* 396; *Darlingt. fl. Cest. p.* 45; *Kunth, l. c.* P. involutum, *Torr. l. c.*

Perennial. Culm 8 – 15 inches high. Lowest leaves short and approximate; upper ones 3 – 6 inches long, 1 – 1½ line wide, pale green, more or less hairy underneath, smoothish above, fringed with a few long hairs toward the base, involute when old: sheaths more or less villous with rather stiff spreading hairs. Panicle about 2 inches long, on a slender peduncle; the branches mostly in pairs, one of them bearing a single spikelet, the other two. Spikelets about a line long, somewhat acuminate when dry, conspicuously striate. Lower glume broadly ovate, inserted a little distance below the other. Neuter flower with the lower palea the length of the larger glume, and one fourth longer than the ovate perfect flower.

Dry sandy soils, particularly on hillsides: common. *Fl.* May – June.

11. PANICUM DICHOTOMUM, *Linn.* *Polymorphous Panic-grass.*

Culm at first nearly simple, with a single pedunculate terminal compound panicle, but at length more or less branched and fastigiate with small lateral nearly simple panicles; spikelets minute, on long peduncles, obovate, mostly pubescent; lower glume one third the length of the upper; lower flower neuter, the upper palea minute; primary leaves broadly lanceolate, distant; secondary leaves much smaller, linear-lanceolate, crowded.—*Linn. sp.* 1. *p.* 58; *Pursh, fl.* 1. *p.* 367; *Ell. sk.* 1. *p.* 124; *Muhl. gram. p.* 112; *Torr. fl.* 1. *p.* 145; *Beck, bot. p.* 395; *Darlingt. fl. Cest. p.* 46; *Kunth, enum.* 1. *p.* 105. P. nitidum, *Lam. enc.* 4.

p. 749 ; *Michx. fl.* 1. *p.* 49 ; *Torr. l. c.* ; *Darlingt. l. c.* P. barbulatum, *Michx. l. c.* P. ramulosum, *Michx. l. c.* P. microcarpon, *Muhl. l. c.?* ; *Darlingt. l. c.*

Perennial. Culm 8 – 24 inches high, at first simple, mostly erect, but sometimes procumbent (especially when growing in tufts in open places), smooth or pubescent. Radical leaves short and very broad, often purplish and usually smoothish ; those of the culm narrower and much longer, spreading, smooth or hairy : sheaths pubescent, villous or sometimes smooth. Primary panicle more or less exserted and usually rather compound, often purplish ; the branches mostly flexuous. Late in the season, this panicle breaks off, and the culm produces branches which are usually fastigiate and crowded, with small simple panicles, either exserted, or partly concealed among the clusters of leaves. Spikelets scarcely more than half a line long, obtuse. Lower glume broadly ovate ; upper one 7-nerved. Neuter flower with the upper palea less than half the length of the lower. Perfect flower ovate, smooth and shining, as long as the upper glume.

Moist meadows, fields and woods : common. *Fl.* July – September. An extremely variable species ; its size, mode of growth, etc. depending much on the nature of the soil, exposure, and the age of the plant. In shady thickets it grows very tall, and is at first quite simple, with a single panicle on a long peduncle. In sterile and more exposed places, it is of much more humble growth, with the primary panicle but little exserted. At maturity, the spikelets fall off, and commonly the stalk of the panicle separates in the sheath, while the culm becomes branched, often very much so, with numerous secondary and smaller panicles. Sometimes dwarf states of the plant occur, with the culms only a few inches high. The leaves and sheaths vary from nearly or quite smooth to villous. This species was described by Gronovius and Linnæus, in its autumnal state.

12. PANICUM VERRUCOSUM, *Muhl.* *Warty-flowered Panic-grass.*

Culm slender, smooth, decumbent and geniculate, branching from the base and often diffuse; panicle capillary, widely spreading, few-flowered ; spikelets ovate ; flowers verrucose (dark green) ; neuter flower without an upper palea. — *Muhl. gram. p.* 113 ; *Torr. fl.* 1. *p.* 148 ; *Beck, bot. p.* 396 ; *Trin. diss.* 2. *p.* 235, *and Pan. gen. l. c. p.* 216. P. debile, *Ell. sk.* 1. *p.* 129.

Annual? Culm 1 – 2 feet long, very slender, much branched ; the nodes smooth. Leaves 2 – 3 lines wide, spreading, deep green, smooth. Panicles lateral and terminal, loose, consisting of few capillary somewhat flexuous branches. Spikelets $\frac{3}{4}$ths of a line long. Lower glume very short ; upper one roughened with minute warts. Palea of the neuter flower resembling the upper glume. Perfect flower smooth and dull.

Sandy swamps, Long Island. *Fl.* August – September. A well marked species, easily distinguished by its capillary loose panicle and verrucose spikelets.

**** *Spikelets somewhat racemose on the branches of the panicle.*

13. PANICUM AGROSTOIDES, *Spreng.* (Pl. CXLVIII.) *Agrostis-like Panic-grass.*

Culm compressed, smooth; leaves very long; panicles lateral and terminal, pyramidal, spreading; the spikelets ovoid-oblong, acute, appressed and somewhat racemose on the branchlets; lower flower neuter, of 2 nearly equal paleæ. — *Spreng. pug.* 2. *p.* 4; *Muhl. gram. p.* 119; *Torr. fl.* 1. *p.* 146; *Beck, bot. p.* 396; *Darlingt. fl. Cest. p.* 48; *Trin. ic.* 22. *t.* 261, *and Pan. gen. l. c. p.* 178. P. elongatum, *Pursh, fl.* 1. *p.* 69 (not of *Poir.*). P. agrostidiforme, *Lam. enc.* 4. *p.* 748?; *Kunth, enum.* 1. *p.* 94.

Perennial. Culm 2 – 3 feet high, smooth at the nodes. Leaves forming a tuft at the base of the culm, 2 – 4 lines wide: ligule very short, obliquely truncate. Panicles usually several, the terminal one largest: branches mostly in pairs or somewhat fasciculate, a little flexuous, finally horizontal. Spikelets three fourths of a line long, mostly purplish, somewhat crowded and one-sided, smooth. Lower glume about half the length of the upper, very acute; the upper one longer than the neuter flower, strongly 5-nerved. Upper palea of the neuter flower rather herbaceous, acute. Paleæ of the perfect flower slightly bearded at the tip.

Wet meadows: common near New-York. *Fl.* July – August.

14. PANICUM PROLIFERUM, *Lam.* *Proliferous Panic-grass.*

Whole plant smooth; culm assurgent or procumbent, branching and geniculate at the base; panicles terminal and lateral, compound; spikelets somewhat racemose on the branchlets; abortive flower without an upper palea. — *Lam. enc.* 4. *p.* 747; *Pursh, fl.* 1. *p.* 68; *Torr. fl.* 1. *p.* 149; *Beck, bot. p.* 396; *Darlingt. fl. Cest. p.* 49; *Kunth, enum.* 1. *p.* 100; *Trin. Pan. gen. l. c. p.* 266. P. miliaceum, *Walt. fl. Car. p.* 72. P. dichotomiflorum, *Michx. fl.* 1. *p.* 48. P. geniculatum, *Muhl. gram. p.* 123.

Annual. Culm 1 – 3 feet long, thick and succulent. Leaves 8 – 12 inches or more in length, and half an inch wide. Sheaths a little hairy at the throat. Panicles large and pyramidal; the branches much divided, straight and capillary. Lower glume very broad, rather obtuse; upper one acute, about 7-nerved. Abortive flower without any trace of an upper palea. Perfect flower shorter than the glumes, acute, smooth. Anthers orange. Scales oblong, entire.

Wet meadows and borders of rivers, particularly in sandy brackish soils; sometimes in dry places. *Fl.* August – September. Cattle are very fond of this grass.

12. PENNISETUM. *L. C. Rich. in Pers. syn.* 1. *p.* 72; *R. Br. prodr. p.* 195. *BOTTLE-GRASS.*

SETARIA, *Beauv.*

[From *penna*, a pen, and *seta*, a bristle; in allusion to the involucre.]

Spikelets 2-flowered, with an involucre of several distinct bristles. Glumes two, unequal, membranaceous. Lower flower staminate or neuter: paleæ 1 – 2, the outer one resembling in texture the glumes: upper flower perfect, coriaceous.— Inflorescence a dense simple or compound spike-like panicle.

1. PENNISETUM GLAUCUM, *R. Br.* *Bottle-grass. Foxtail-grass.*

Spike cylindrical, simple (tawny); involucre of 6 – 10 fasciculate bristles which are much longer than the spikelets; glumes smooth; perfect flower transversely rugulose. — *R. Br. prodr. p.* 195; *Nutt. gen.* 1. *p.* 55. Panicum glaucum, *Linn. sp.* 1. *p.* 56; *Michx. fl.* 1. *p.* 46; *Muhl. gram. p.* 100; *Ell. sk.* 1. *p.* 112; *Bigel. fl. Bost. p.* 46; *Trin. diss.* 2. *p.* 162, *and ic.* 17. *t.* 195. Setaria glauca, *Beauv. Agrost. p.* 51; *Rœm. & Schult. syst.* 2. *p.* 490; *Torr. fl.* 1. *p.* 152; *Beck, bot. p.* 397; *Kunth, enum.* 1. *p.* 149; *Darlingt. fl. Cest. p.* 51.

Annual. Culm 1 – 3 feet high. Leaves 3 – 4 lines wide, hairy at the base: sheaths smooth: ligule bearded. Spike 2 – 3 inches long; the rachis angular and hairy. Bristles of the involucre 2 – 3 times as long as the spikelets, rough upwards, tawny or dull orange-yellow when old. Paleæ of the staminate or neuter flower nearly equal.

Fields and cultivated grounds: common. *Fl.* July – August. Probably a naturalized exotic.

2. PENNISETUM VIRIDE, *R. Br.* *Green Foxtail. Bottle-grass.*

Spike cylindrical (green); involucre of 4 – 10 fasciculate bristles, much longer than the spikelets; perfect flower longitudinally striate, dotted; margin of the sheaths hairy.—*R. Br. prodr. p.* 195; *Nutt. gen.* 1. *p.* 55. Panicum viride, *Linn. sp.* (ed. 2.) 1. *p.* 83; *Pursh, fl.* 1. *p.* 66; *Muhl. gram. p.* 102; *Trin. diss.* 2. *p.* 163, *and ic.* 17. *t.* 203. Setaria viridis, *Beauv. Agrost. p.* 51; *Rœm. & Schult. syst.* 2. *p.* 490; *Torr. fl.* 1. *p.* 152; *Beck, bot. p.* 397; *Kunth, enum.* 1. *p.* 151; *Darlingt. fl. Cest. p.* 50.

Annual. Culm 2 – 3 feet high, erect, mostly simple. Leaves smoothish, 3 – 4 lines wide: ligule bearded. Spike 2 – 3 inches long; the rachis hairy. Bristles of the involucre upwardly rough. Lower glume broadly ovate, 3-nerved; upper glume 5-nerved. Lower flower neuter; the upper palea small. Paleæ of the perfect flower smooth, only obscurely rugose transversely; the longitudinal lines and dots very distinct.

Cultivated grounds: frequent. *Fl.* July – August. This species also is probably of foreign origin.

13. CENCHRUS. *Linn.* (in part); *Endl. gen.* 783. *HEDGEHOG GRASS.*

[From the Greek, *kenchros*, millet; but why applied to this genus, is not evident]

Spikelets 2-flowered, solitary, in pairs, or more, enclosed in a cleft spiny or bristly involucre which becomes indurated in fruit. Glumes 2, unequal, membranaceous. Lower flower staminate or neuter, membranaceous, with 1 or 2 paleæ: upper flower perfect, somewhat coriaceous. Styles united at the base. — Mostly annual branching grasses, with flat leaves and terminal spikes.

1. CENCHRUS TRIBULOIDES, *Linn.* *Bur-grass. Hedgehog Grass.*

Involucres globose, pubescent, muricate-spiny, mostly split on one or both sides, enclosing 2 – 3 spikelets.—*Linn. sp.* (ed. 2.) 2. *p.* 1488; *Vahl, enum.* 2. *p.* 395; *Michx. fl.* 1. *p.* 61; *Muhl. gram. p.* 52; *Ell. sk.* 1. *p.* 93. *t.* 4. *f.* 3; *Trin. diss.* 2. *p.* 74; *Beck, bot. p.* 399; *Kunth, enum.* 1. *p.* 166; *Darlingt. fl. Cest. p.* 52. C. echinatus, *Muhl. gram. l. c.; Torr. fl.* 1. *p.* 68 (and *var.* tribuloides), not of *Linn.* C. Carolinianus, *Walt. fl. Car. p.* 79.

Culm erect or procumbent, 1 – 2 feet long, geniculate and branching at the base. Leaves flat, three lines wide: sheaths smooth, bearded at the throat. Spikes about two inches long, consisting of 8 – 10 sessile bur-like heads. Involucre beset with rigid retrorsely scabrous spines, more or less pubescent and whitish, split (when old) nearly to the base in one or two places, almost wholly enclosing the spikelets. Lower flower neuter. Glumes ovate-lanceolate, 5-nerved. Paleæ of the perfect flower somewhat cartilaginous. Caryopsis roundish-ovate.

Dry sandy soils, particularly near the salt water; in the latter situation, the spikes are whitish: common near New-York, and on Long Island. A troublesome weed in some places, on account of the adhering prickly burs.

TRIBE IV. *STIPACEÆ. Kunth.*

Spikelets one-flowered. Lower palea involute, mostly indurated in fruit, awned at the tip; the awn simple or 3-cleft, mostly twisted and articulated at the base. Ovary more or less stipitate. Scales mostly 3.

14. ORYZOPSIS. *Michx. fl.* 1. *p.* 51. *t.* 9. *MOUNTAIN RICE.*

PIPTATHERUM, *Beauv.*; URACHNE, *Trin.*

[From the Greek, *oryza*, rice, and *opsis*, resemblance.]

Glumes herbaceo-membranaceous, equal, awnless. Paleæ elliptical, nearly equal, coriaceous, with an articulated awn at the tip. Scales linear or lanceolate, as long as the ovary. Styles sometimes united at the base. — Erect perennial grasses, with the inflorescence paniculate.

1. ORYZOPSIS ASPERIFOLIA, *Michx.* *Large White-grained Mountain-rice.*

Radical leaves elongated; sheaths of the culm nearly leafless; panicle racemose; awn rather longer than the flower; styles united below; mature paleæ whitish. — *Michx. l. c.; Pursh, fl.* 1. *p.* 60; *Torr. fl.* 1. *p.* 71; *Bigel. fl. Bost. p.* 25; *Nutt. in jour. acad. Phil.* 1. *p.* 125; *Kunth, enum.* 1. *p.* 176 (in part). Urachne asperifolia, *Trin. diss.* 1. *p.* 174, *and Pan. gen. l. c. p.* 128. U. leucosperma, *Link, hort. Berol.* 1. *p.* 94, fide *Kth.*

Culm 15 – 18 inches high, simple, smoothish. Radical leaves nearly as long as the culm, acuminate, glaucous underneath, rough : culm-leaves few (2 – 3), very short; the upper sheaths almost naked, and a little swelling. Panicle 2 – 3 inches long, very simple; the branches short, mostly appressed, 1 – 2-flowered. Glumes nearly equal in length and breadth, acute or acuminate, 7 – 9-nerved, pubescent on the margin. Paleæ with a short dense tuft of white hairs at the base; the lower one involute and surrounding the upper, thinly clothed with appressed hairs; the awn 5 – 8 lines long, curved, slender : upper palea shorter and narrower. Scales lanceolate-linear, nearly as long as the upper palea. Stamens 3 : anthers linear, elongated. Styles united below : stigmas partly exserted, very long. Scales nearly as long as the inner palea.

Rocky hillsides, and dry woods. Western and northern counties.

2. ORYZOPSIS MELANOCARPA, *Muhl.* *Black-fruited Mountain-rice.*

Culm leafy; panicle nearly simple, the lower branches more or less diverging; flowers somewhat racemose on the branches; glumes ovate-lanceolate; paleæ blackish when mature, slightly hairy at the base, acuminate, the awn 3 times as long as the flower. — *Muhl. gram. p.* 79. O. asperifolia, *Kunth, enum.* 1. *p.* 176 (in part). Milium racemosum, *Smith in Rees' cyclop.; Bigel. fl. Bost. p.* 25. Piptatherum nigrum, *Torr. fl.* 1. *p.* 79; *Beck, bot. p.* 393. Urachne racemosa, *Trin. diss.* 1. *p.* 174, *and Pan. gen. l. c. p.* 127.

Culm 2 – 3 feet high, erect, simple. Leaves 8 – 12 inches long and nearly half an inch wide, dark green, pubescent underneath, smooth above : sheaths with a bearded ring at the throat. Panicles sparingly branched; the lower branches often in pairs. Spikelets on clavate pedicels. Glumes acuminate; the lower 7-nerved; upper one 5-nerved. Paleæ blackish when old; the lower one embracing the upper, with a straight awn at the tip, nearly an inch in length. Stamens 3 : anthers linear, yellow. Styles distinct; the stigmas simply plumose. Caryopsis oblong, black.

Rocky woods, in the western and northern parts of the State. *Fl.* August. It is strange that Kunth should have confounded this with the preceding species, from which it is abundantly distinct.

3. ORYZOPSIS CANADENSIS. *Smallest Oryzopsis.*

Leaves very short, pungent; panicle contracted, the branches usually in pairs, ovoid; paleæ hairy; awn short, often deciduous or wanting. — O. parviflora, *Nutt. in jour. acad. Phil.* 3. *p.* 125 (not Urachne parviflora, *Trin.*). Stipa juncea, *Michx. fl.* 1. *p.* 54. S. Canadensis, *Poir, enc.* 7. *p.* 452; *Pursh, fl.* 1. *p.* 72; *Kunth, enum.* 1. *p.* 180. Milium pungens, *Torr. fl.* 1. *p.* 78; *Bigel. fl. Bost. p.* 26; *Beck, bot. p.* 393. Urachne brevicaudata, *Trin. gen. Pan. l. c. p.* 127.

Culm 8 – 15 inches high, simple, slender, but rigid. Radical leaves 6 – 8 inches long, about a line wide, erect, strongly nerved and rough above, smooth underneath, finally involute: culm-leaves varying from an inch to scarcely a line in length: sheaths a little swelling, roughish; the ligule ovate, lacerate and bearded. Panicle oblong, about two inches long, consisting of few spikelets; the branches flexuous, bearing one or two spikelets at the extremity. Spikelets 2 lines long. Glumes ovate, membranaceous, concave, obtuse or abruptly acuminate, obscurely nerved. Paleæ as long as the glumes, equal, acute, nerveless, densely clothed with short white appressed hairs: lower one often with a short awn at the tip. Stamens 3: anthers yellow. Styles united: stigmas white.

Rocky hills, and dry barren plains; common near Rome, and on the summit of the Crow's Nest in the Highlands of the Hudson. *Fl.* May.

15. STIPA. *Linn.; Kunth, enum.* 1. *p.* 179. *FEATHER-GRASS.*

[From the Greek, *stupe*, a feathery material; some of the species having beautifully feathered awns.]

Spikelets one-flowered; the flower stipitate. Glumes membranaceous. Paleæ longer than the glumes, somewhat coriaceous, cylindrical-involute: lower one awned at the summit; the awn twisted at the base. Caryopsis terete. — Inflorescence paniculate; the spikelets pedicellate.

1. STIPA AVENACEA, *Linn.* *Black Oat-grass.*

Leaves setaceous; panicle somewhat secund and spreading, the branches mostly in pairs; glumes as long as the paleæ; awn very long, naked. — *Linn. sp.* 1. *p.* 78; *Pursh, fl.* 1. *p.* 72; *Muhl. gram. p.* 181; *Ell. sk.* 1. *p.* 139; *Torr. fl.* 1. *p.* 80; *Bigel. fl. Bost. p.* 31; *Kunth, enum.* 1. *p.* 180. S. barbata, *Michx. fl.* 1. *p.* 53. S. Virginica, *Pers. syn.* 1. *p.* 99.

Perennial. Culm 1½ – 2 feet high, slender, simple. Leaves mostly radical, 6 – 8 inches long. Panicle somewhat nodding, at first contracted, but finally diffuse. Glumes nearly equal, acuminate. Stipe of the flower thickly clothed with brown hairs. Lower palea brownish, narrowly lanceolate, rough; the awn at its extremity 2 – 3 inches long, and twisted; upper palea smaller, membranaceous, mucronate. Stamens 3. Styles distinct, short: stigmas white. Scales 2, lanceolate. Caryopsis dark brown.

Dry sandy or rocky woods, not uncommon in the valley of the Hudson. *Fl.* June.

16. ARISTIDA. *Linn.; Kunth, enum.* 1. *p.* 187. *THREE-AWNED GRASS.*

[From *arista*, the Latin word for beard.]

Flower stipitate. Glumes membranaceous, unequal. Paleæ 2; the lower one terete-involute, with a 3-parted or 3-cleft awn at the summit: upper palea very small, awnless. Ovary stipitate, smooth. Scales 2, entire, smooth. — Leaves mostly involute. Spikelets racemose or paniculate.

1. ARISTIDA DICHOTOMA, *Michx.* (Pl. cxlix.) *Dichotomous Three-awned Grass.*

Culm cespitose, dichotomously branched from the base; panicle contracted, racemose; lateral awn very short; the intermediate one nearly as long as the paleæ, contorted. — *Michx. fl.* 1. *p.* 41; *Pursh, fl.* 1. *p.* 72; *Ell. sk.* 1. *p.* 141; *Torr. fl.* 1. *p.* 81; *Bigel. fl. Bost. p.* 31; *Trin. diss.* 1. *p.* 178; *Beck, bot. p.* 400; *Darlingt. fl. Cest. p.* 53; *Kunth, enum.* 1. *p.* 188, *and* "*gram.* 2. *t.* 174." Curtopogon dichotomus, *Beauv. p.* 32. *t.* 8. *f.* 7.

Annual. Culm 4 – 15 inches high, slender, branching at each joint. Leaves very slender, erect, smoothish; the sheaths shut and open. Glumes unequal, linear, serrulate on the keel, mucronate, or slightly awned a little below the tip. Paleæ very unequal: lower one closely involute, smoothish; the lateral divisions of the awn not half the length of the paleæ; the middle one contorted, or bent horizontally. Stamens 3. Styles distinct. Caryopsis linear, elongated.

Sandy fields and dry sterile hill sides; common. *Fl.* September.

2. ARISTIDA GRACILIS, *Ell.* *Slender Three-awned Grass.*

Culm very slender, erect; panicle spiked, the flowers appressed; lateral awns rather shorter than the paleæ, erect; middle one longer, bent, not twisted; lower palea spinulose on the keel. — *Ell. sk.* 1. *p.* 142. *t.* 8. *f.* 3; *Trin. diss.* 1. *p.* 178; *Kunth, enum.* 1. *p.* 187. A. stricta, *Darlingt. fl. Cest. p.* 53, not of *Michx.*

Annual. Culm 4 – 15 inches high, smooth. Leaves very narrow, convolute when dry; the sheaths with a few long hairs at the throat. Panicle 2 – 5 inches long, slender; the branchlets few-flowered and rather remote. Glumes a little unequal, somewhat awned, rough on the keel. Lower palea rough, and the keel conspicuously serrulate-spinulose, a little hairy at the base, often spotted or banded with dull purple or gray: lateral awns mostly rather shorter than the paleæ; middle one more than twice as long as the others.

Sandy fields, Suffolk county, Long Island. *Fl.* September. This species is not uncommon in the Pine barrens of New-Jersey. It never occurs except in the poorest lands.

TRIBE V. *AGROSTIDEÆ. Kunth.*

Spikelets one-flowered, rarely with a subulate rudiment of an upper flower. Glumes and paleæ 2, membranaceo-herbaceous: lower palea often awned. Stigmas mostly sessile.

17. MUHLENBERGIA. *Schreb.; Trin. diss.* 1. *p.* 130. *MUHLENBERGIA.*

[In honor of the late Rev. Dr. MUHLENBERG, a distinguished North American botanist.]

CINNA, *Linn.; Link.*

Glumes mostly awnless; the lower one shorter. Paleæ lanceolate; the lower mucronate or awned at the tip; upper one bicarinate. — Culms usually cespitose and branching. Panicle more or less contracted.

The Linnæan name *Cinna*, should have been adopted for this genus; but to make the change at this late day would greatly increase the number of synonymes, without any benefit to the science.

1. MUHLENBERGIA DIFFUSA, *Schreb.* *Drop-seed Grass.*

Culm diffuse, decumbent; panicle slender; glumes very minute; bristle about twice as long as the paleæ. — *Schreb. gram.* 2. *t.* 51; *Willd. op.* 1. *p.* 320; *Pursh, fl.* 1. *p.* 61; *Ell. sk.* 1. *p.* 98. *t.* 5. *f.* 1.; *Muhl. gram. p.* 56; *Torr. fl.* 1. *p.* 82; *Trin. diss.* 1. *p.* 188; *Beck, bot. p.* 391; *Kunth, enum. p.* 200. Dilepyrum minutiflorum, *Michx. fl.* 1. *p.* 40.

Root fibrous. Culm 12 – 18 inches long, compressed, somewhat geniculate, much branched; the branches more or less assurgent. Leaves flat, 2 – 3 lines wide, pale green, somewhat rough; sheaths open, smooth. Ligule very short, truncate. Panicles terminating the branches, very slender; the flowers pedicellate. Glumes not one sixth part as long as the paleæ, persistent; the upper one obtuse or truncate. Paleæ unequal, entire, hairy at the base; the lower one longer, with three prominent scabrous nerves: bristle slender, often purplish. Stamens 3: anthers pale yellow. Caryopsis linear-oblong.

Dry open woods and hill sides: frequent. *Fl.* August – September. This is a very abundant grass in the Western States, and is the "*Nimble Will*" of Kentucky farmers.

2. MUHLENBERGIA CINNA, *Trin.* *Tall Muhlenbergia.*

Culm simple, erect; panicle large, loose; spikelets much compressed; glumes and paleæ rough on the keel; paleæ stipitate, naked at the base, about the length of the upper glume, upper one with a very short bristle below the tip. — *Trin. diss.* 1. *p.* 191; *Gray, Gram. and Cyp.* 1. *no.* 16. Cinna arundinacea, *Linn. sp.* 1. *p.* 7; *Michx. fl.* 1. *p.* 38; *Schreb. gram.* 1. *p.* 135. *t.* 49; *Torr. fl.* 1. *p.* 91; *Bigel. fl. Bost. p.* 29; *Beck, bot. p.* 390; *Kunth, enum.* 1. *p.* 206; *Darlingt. fl. Cest. p.* 53. Agrostis Cinna, *Lam. ill.* 1. *p.* 162; *Pursh, fl.* 1. *p.* 64.

Rhizoma creeping. Culm 2 – 5 feet high, terete, smooth. Leaves 3 – 5 lines wide, smooth. Ligule elongated. Panicle 6 – 10 inches long, somewhat secund or nodding; the branches mostly in fours. Spikelets green or purplish, nearly one-fourth of an inch long. Glumes lanceolate, very acute; the lower one about one-fourth shorter than the upper. Palcæ on a short stipe, entire; the upper one shorter. Stamen solitary: anther yellow.

Swamps and moist shady woods; frequent. *Fl.* August – September.

3. MUHLENBERGIA WILLDENOVII, *Trin.* *Willdenow's Muhlenbergia.*

Culm mostly simple, pubescent at the nodes; ligule nearly wanting; panicle contracted, filiform; paleæ hairy at the base, about twice as long as the ovate acuminate glumes, the lower one with an awn three times the length of the spikelet. — *Trin. diss.* 1. *p.* 188. *t.* 5. *f.* 3; *Kunth, enum.* 1. *p.* 200. Agrostis tenuiflora, *Willd. sp.* 1. *p.* 364, *and hort. Berol. t.* 12; *Pursh, fl.* 1. *p.* 63; *Muhl. gram. p.* 63; *Torr. fl.* 1. *p.* 87; *Beck, bot. p.* 388; *Darlingt. fl. Cest. p.* 57. Cinna tenuiflora, *Link.*

Rhizoma branching and creeping. Culm 2 – 3 feet or more in height, sometimes with a few short appressed branches, retrorsely pubescent about the nodes. Leaves 2 – 4 lines wide, very thin, spreading horizontally; the sheaths minutely pubescent. Panicle elongated, very slender and contracted, often partly sheathed at the base. Glumes a little unequal, mucronate; the keel prominent. Paleæ unequal, entire, rough; the lower one hairy on the sides towards the base; the awn often 4 times the length of the flower. Stamens 3. Stigmas simply plumose.

Rocky woods: rather common. *Fl.* August.

4. MUHLENBERGIA SYLVATICA, *Torr. & Gr.* *Wood Muhlenbergia.*

Culm ascending, much branched, diffuse, smooth; panicle slender, with the branches somewhat spiked; paleæ rather longer than the ovate-lanceolate glumes, a little hairy at the base; awn about three times the length of the flower. — *T. & Gr. in Gray, Gram. & Cyp.* 1. *no.* 13. Agrostis sylvatica, *Torr. fl.* 1. *p.* 87; *Beck, bot. p.* 388; *Darlingt. fl. Cest. p.* 57. A. diffusa, *Muhl. gram. p.* 64, not of *Host.*

Rhizoma creeping. Culm 2 – 3 feet long; the branches at first erect, but at length diffuse: nodes swelling. Leaves spreading, broadly linear; the sheaths open, smooth: ligule lacerate. Panicles somewhat densely flowered. Glumes a little unequal, white with a green keel, and slender acumination. Paleæ usually a little longer than the glume, but sometimes about the same length, acute, often spotted with purplish gray, with a slender rough awn at the tip. Stamens 3: anthers pale yellow. Caryopsis oblong, dark brown.

Rocky hills, and borders of woods. *Fl.* September. Resembles the preceding in many respects, but differs in being much branched and diffuse. The glumes are also longer and narrower, and the culm is smooth at the node.

5. MUHLENBERGIA SOBOLIFERA, *Trin.* *Awnless Muhlenbergia.*

Culm erect, somewhat branched; panicle simple, very slender or filiform, the branches appressed; paleæ equal, longer than the oblong acute glumes, hairy at the base, awnless, the lower one mucronate at the tip. — *Trin. diss.* 1. *p.* 89. *t.* 5. *f.* 4; *Gray, Gram. & Cyp.* 2. *no.* 107. Agrostis sobolifera, *Muhl. gram. p.* 70; *Willd. enum.* 1. *p.* 95; *Torr. fl.* 1. *p.* 87; *Beck, bot. p.* 388; *Darlingt. fl. Cest. p.* 56. Cinna sobolifera, "*Link, enum.* 1. *p.* 71," ex *Kunth, enum.* 1. *p.* 207.

Rhizoma perennial, creeping, woody. Culm erect or assurgent, about two feet high; the branches few, erect and slender. Leaves about 2 lines wide, pale green: sheaths open: ligule nearly wanting. Panicle with the flowers rather crowded, on slender branches. Glumes somewhat unequal, about one third shorter than the paleæ. Lower palea conspicuously hairy at the base, roughish, with a short slender point at the tip. Stamens 3. Stigmas purplish.

Open rocky woods. *Fl.* August – September.

6. MUHLENBERGIA GLOMERATA, *Trin.* *Cluster-spiked Muhlenbergia.*

Panicle oblong, thyrsoid, interrupted at the base; glumes linear, acuminate, nearly equal, awned, twice the length of the awnless paleæ. — *Trin. diss.* 1. *p.* 191. *t.* 5. *f.* 10; *Kunth, enum.* 1. *p.* 200. Polypogon glomeratus, *Willd. enum.* 1. *p.* 87. P. setosus, *Spreng. mant.* 1. *p.* 31. P. racemosus, *Nutt. gen.* 1. *p.* 51; *Torr. fl.* 1. *p.* 97; *Beck, bot. p.* 390. Agrostis racemosa, *Michx. fl.* 1. *p.* 53; *Pursh, fl.* 1. *p.* 65; *Bigel. fl. Bost. p.* 29. A. setosa, *Muhl. gram. p.* 68. Cinna racemosa, *Kunth, enum.* 1. *p.* 207.

Culm erect, a little compressed, smooth, mostly naked towards the base, simple, or with a few erect branches above. Leaves sowewhat distichous, 3 – 5 inches long, erect, rough, more or less glaucous: sheaths smooth, a little open: ligule almost wanting. Panicle 2 – 3 inches long: branches thick and spikelike, many flowered, the lower ones remote. Glumes very slender, terminating in a long rough straight bristle. Paleæ sessile, hairy on the lower part and at the base, each 3-nerved. Stamens 3: anthers yellow. Caryopsis oblong-cylindrical.

Swamps, and in dry sandy barrens. Long Island, and the western part of the State. *Fl.* August – September.

7. MUHLENBERGIA MEXICANA, *Trin.* *Mexican Muhlenbergia.*

Culm erect, branched; panicles terminal and lateral, contracted, densely flowered; glumes unequal, linear-lanceolate, very acute; paleæ hairy at the base, about as long as the glumes, awnless, very acute. — *Trin. diss.* 1. *p.* 189. M. foliosa, *Trin. l. c.*? Agrostis Mexicana, *Linn. mant. p.* 31; *Muhl. gram. p.* 67. A. lateriflora, *Michx. fl.* 1. *p.* 53; *Pursh, fl.* 1. *p.* 64; *Torr. fl.* 1. *p.* 86; *Beck, bot. p.* 388; *Darlingt. fl. Cest. p.* 56. Cinna Mexicana, *Link, enum.* 1. *p.* 71, ex *Kunth, enum.* 1. *p.* 206. C. lateriflora, and ? filiformis, *Kunth, l. c.*

Rhizoma creeping. Culm 2 feet or more high, much branched, with numerous nodes, often geniculate ; the branches erect, numerous. Leaves 2 – 3 lines wide, smooth : sheaths compressed, loose. Panicles numerous, elongated, with the branches appressed, exserted or sheathed at the base. Spikelets about 2½ lines long, pale green or dull purplish. Glumes rough on the keel, attenuated to a slender point. Paleæ either a little longer than the glumes, or about their length, sometimes spotted ; the upper one tapering to a short subulate tip. Stamens 3. Caryopsis cylindrical-oblong.

Moist meadows, borders of fields, and cultivated grounds : common. August. It is sometimes troublesome in gardens ; its widely spreading perennial roots being very difficult to eradicate. *M. foliosa*, Trin. (Agrostis filiformis, *Muhl. gram.*) seems to be only a variety of this species.

18. VILFA. *Adans. ; Trin. diss.* 1. *p.* 120. *VILFA.*

SPOROBOLUS, *R. Br.* Species of AGROSTIS, *Linn. &c.*

Glumes carinate ; the lower one smaller. Paleæ awnless ; the lower one rather acute, longer than the glumes : the upper bicarinate. Stigmas simply plumose. Caryopsis deciduous. — Panicle diffuse, or contracted and spikelike.

1. VILFA VAGINÆFLORA, *Torr.* *Hidden-flowered Vilfa.*

Annual. Culms numerous, assurgent ; leaves involute and somewhat rigid ; panicles spikelike, the terminal one more or less exserted, lateral ones concealed in the sheaths ; glumes equal, about as large as the paleæ. — *Torr. in Gray's Gram. & Cyp. part* 1, *no.* 3 ; *Gray, in ann. lyc. N. York*, 3. *p.* 234. A. Virginica, *Muhl. gram. p.* 74 ; *Torr. fl.* 1. *p.* 88 ; *Beck, bot. p.* 389 ; *Darlingt. fl. Cest. p.* 57, not of *Linn.*

Culms somewhat cespitose, geniculate at the base, simple, rather rigid ; the joints distant. Leaves 2 – 3 inches long, hairy at the base, slender at the point ; the sheaths swelled with the inclosed flowers : ligule wanting. Panicles oblong, few-flowered ; the branches alternate or in pairs, 1 – 2-flowered. Glumes nearly equal, smooth, acute, carinate ; lower one narrowed, lanceolate. Paleæ ovate-lanceolate, slightly pubescent, one-nerved ; the lower one shorter than the upper, and about the length of the paleæ. Stamens 3, in the terminal panicles, minute, or wanting ? in the lateral ones : anthers purple. Caryopsis about two-thirds the length of the paleæ.

Sandy arid fields and barren hill sides : frequent. September.

2. VILFA ASPERA, *Beauv.* *Rough-leaved Vilfa.*

Panicle contracted, spiked, partly exserted from the uppermost sheath; paleæ much larger than the glumes, smooth or hairy; culm erect; leaves very long, filiform toward the extremity; sheaths bearded at the throat. — *Beauv. agrost. p.* 16. V. longifolia, *Torr. & Gr. in Gray's Gram. & Cyp.* Agrostis aspera, *Michx. fl.* 1. *p.* 53. A. clandestina, *Spreng. cent.* 1. *p.* 32; *Muhl. gram. p.* 74; *Ell. sk.* 1. *p.* 138; *Torr. fl.* 1. *p.* 91; *Bigel. fl. Bost. p.* 29. A. involuta, *Muhl. l. c.*, not of *Poir*; *Torr. l. c.* Sporobolus asper, *Kunth, enum.* 1. *p.* 210, excl. syn. *Torr.* Muhlenbergia clandestina, *Trin. diss.* 1. *p.* 190?

Perennial. Culm 2 – 4 feet high, simple, terete. Lower leaves 1 – 2 feet long, about 2 lines wide below, tapering to a long thread-like extremity which is often recurved, involute, very rough on the margin: sheaths smooth, closed, bearded with long whitish hairs at the throat. Panicles often both lateral and terminal; the latter concealed in the sheaths; the former more or less exserted, but sometimes wholly enclosed. Spikelets about $2\frac{1}{2}$ lines long, compressed. Glumes lanceolate, scarcely keeled, one-nerved. Paleæ unequal; the lower one nearly twice as long as the upper, acute, smooth or hairy toward the base and along the keel: upper one shorter. Stamens 3: filaments short: anthers small and oblong. Caryopsis oblong, brown.

Sandy fields and hill-sides: not common. *Fl.* September. I think there can be little doubt that the *Agrostis aspera* of Michaux, includes both *A. involuta*, Muhl. and *A. clandestina*, Spreng.

3. VILFA SEROTINA, *Torr. & Gr.* *Late-flowering Vilfa.*

Culm filiform, compressed; leaves very narrow, keeled; panicle elongated, capillary, somewhat diffuse; the branches distant, alternate; glumes ovate, a little unequal, about half the length of the oblong obtuse paleæ. — *Torr. & Gr. in Gray, Gram. & Cyp. part* 1. Agrostis serotina, *Torr. fl.* 1. *p.* 88; *Beck, bot. p.* 388.

Annual. Culms 12 – 18 inches high, growing in dense patches, very slender, sometimes branching at the base, smooth, often viviparous at the nodes. Leaves 2 – 3 inches long, and half a line wide, smooth: sheaths open: ligule ovate, short. Panicle 3 – 10 inches long: the branches flexuous. Spikelets elliptical, scarcely half a line long, on capillary pedicels. Glumes one-nerved. Paleæ smooth, the lower one shorter. Stamens 3. Caryopsis obovoid.

Sandy swamps: Suffolk county, Long Island. *Fl.* September. A common species in some parts of the pine barrens of New-Jersey. The grain is often in the state of ergot.

4. VILFA HETEROLEPIS, *Gray.* *Strong-scented Vilfa.*

Leaves setaceous; panicle pyramidal, sparsely flowered; lower glume subulate; the upper one ovate, cuspidate, about twice the length of the lower; paleæ nearly equal, pointless, a little shorter than the upper glume. — *Gray in ann. lyc. N. York*, 3. *p.* 233; *Sullivant, cat. pl. Columb. p.* 61.

Perennial. Culm 1 – 2 feet high, smooth. Leaves convolute-setaceous, the lower ones equaling the culm; the upper much shorter: lower sheaths hairy; upper ones smooth. Panicle pyramidal, spreading or somewhat contracted; the branches solitary, nearly simple, few and loosely flowered. Glumes purplish; the lower one reduced to a mere bristle: upper one membranaceous, smooth, ovate or ovate-oblong, one-nerved; the nerve produced into a short cusp. Paleæ rather obtuse, oblong-lanceolate, thin and membranaceous; the upper one a little shorter than the lower. Stamens 3: anthers large, linear, orange-red. Styles very short: stigmas hairy. Caryopsis somewhat globose, smooth and shining.

On rocks, Watertown, Jefferson county (*Dr. Crawe; Dr. Gray*). Mr. Sullivant remarks that this grass emits a strong odor like that of *Poa Eragrostis*, which is perceptible at the distance of three or four feet.

5. VILFA CRYPTANDRA. *Large-panicled Vilfa.*

Panicle pyramidal, the base usually inclosed in the upper sheath, with spreading mostly alternate branches, which are hairy in the axils; spikelets racemose; flowers awnless; lower glume very short; the upper one as long as the nearly equal lanceolate acute paleæ; sheaths bearded at the throat. — Agrostis cryptandra, *Torr. in ann. lyc. N. York*, 1. *p.* 151.

Perennial. Culm $1\frac{1}{2}$ – 3 feet high, simple, leafy, smooth. Leaves 2 – 3 lines long, smooth on both sides: sheaths pubescent along the margin, and densely bearded at the throat, the rest smooth. Panicle large, mostly of a dull bluish color, bursting from the upper sheath, which partly conceals its base; the branches bearing the numerous spikelets in a dense racemose manner. Glumes smooth, acute; the lower one about half the length of the upper, without nerves except the midrib: upper one lanceolate. Paleæ a little rough on the keel. Stamens 3: anthers yellowish. Styles distinct: stigmas white. Caryopsis ovoid, reddish brown. Scales 2, lanceolate, collateral.

Banks of the Erie canal, near Buffalo, in sandy soils (*Dr. Aiken*). *Fl.* August. This species was first found by Dr. James, in Long's Expedition to the Rocky Mountains. It has since been detected in Ipswich, Massachusetts, by Mr. Oakes, and I have specimens of it from several other parts of the United States.

19. AGROSTIS. *Linn.; Kunth, enum.* 1. *p.* 217. BENT-GRASS.

[From the Greek, *agros*, a field; in allusion to the place of growth.]

Glumes 2, somewhat equal, usually much longer than the flower, pointless. Paleæ 2: lower one commonly awned on the back; the upper often minute or nearly wanting. — Culms cespitose. Panicle diffuse; the branches fasciculate-verticillate.

1. AGROSTIS VULGARIS, *Huds.* *Red-top. Herd's-grass.*

Panicle oblong, the branches spreading and roughish; flowers awnless; lower palea 3-nerved; leaves linear; ligule very short and truncate. — *Withering.; Engl. bot. t.* 1761; *Pursh, fl.* 1. *p.* 63; *Muhl. gram. p.* 70; *Torr. fl.* 1. *p.* 85; *Bigel. fl. Bost. p.* 25; *Beck, bot. p.* 387; *Darlingt. fl. Cest. p.* 55; *Kunth, enum.* 1. *p.* 220. A. alba, *Muhl. l. c.* A. polymorpha, *α.*, *Trin. diss.* 1. *p.* 202. A. hispida, *Willd. sp.* 1. 370.

Perennial. Rhizoma creeping. Culm 1 – 2 feet high, erect or ascending, smooth. Leaves 2 – 3 lines wide. Panicle 4 – 6 inches long, usually purplish, the branches slightly hispid. Glumes lanceolate, rough on the keel; the rest smoothish and shining, expanding. Lower palea nearly as long as the glumes, smooth at the base, slightly 3-toothed at the summit: lower one a little more than half the length of the upper.

Pastures and moist meadows: common. *Fl.* July. Probably introduced from Europe.

2. AGROSTIS ALBA, *Linn.* *Herd's-grass. Fiorin-grass.*

Culms ascending, rooting at the lower joints; panicle rather contracted, finally spreading, the branches hispid; lower palea 5-nerved; ligule oblong. — *Linn. sp.* 1. *p.* 65; *Engl. bot. t.* 1189; *Pursh, fl.* 1. *p.* 64; *Ell. sk.* 1. *p.* 137; *Bigel. fl. Bost. p.* 28; *Torr. fl.* 1. *p.* 85; *Beck, bot. p.* 387; *Darlingt. fl. Cest. p.* 56; *Kunth, enum.* 1. *p.* 219. A. stolonifera, *Linn.* A. decumbens, *Muhl. gram. p.* 68.

Culms 1 – 2 feet high, sometimes decumbent. Leaves roughish; the sheaths smooth. Panicle pale green or sometimes purplish. Glumes as in the preceding species. "Lower palea occasionally awned on the back, near the tip." *Darlingt.*

Moist meadows: frequent. *Fl.* June – July. Apparently introduced. This and the preceding species are united by Trinius, and it must be confessed that they are not always readily distinguished. They are both completely naturalized in most parts of the United States, and afford very good pasture for cattle, but are not much esteemed for hay.

3. AGROSTIS LAXIFLORA, *Richards.* *Hair-grass. Thin-grass.*

Culms erect, smooth; leaves linear, the lower ones involute, the sheaths a little rough; panicle very loose, with verticillate capillary rough branches; glumes unequal, lanceolate, aculeolate-hispid on the keel; lower palea oblong, obtuse, about one fourth shorter than the glumes, awnless, or with a very short appressed awn on the back; upper palea minute or wanting. — *Richards. app. Frankl. narr. p.* 731; *Kunth,* "*gram. 2. t.* 130," *and enum.* 1. *p.* 224; *Tuckerm. in Sill. jour.* 45. *p.* 43. A. Michauxii, *Trin. diss.* 1. *p.* 206; *Gray, Gram. & Cyp. part* 1. *no.* 17. Trichodium laxiflorum, *Michx. fl.* 1. *p.* 142. *t.* 8; *Muhl. gram. p.* 60; *Torr. fl.* 1. *p.* 83; *Bigel. fl. Bost. p.* 27; *Beck, bot. p.* 389; *Darlingt. fl. Cest. p.* 54.

var. *cæspitosa:* cespitose; panicle ovoid, at length divaricate; glumes equal; palea awnless; leaves involute, filiform. — A. laxiflora, *β.* montana, *Tuckerm. l. c.?* Trichodium montanum, *Torr. l. c.*

var. *scabra*: culm often geniculate at the base; panicle diffuse, the branches flexuous and divaricate; glumes unequal; leaves linear, flat. — A. scabra, *Willd. sp.* 1. *p.* 370; *Tuckerm. l. c.* Trichodium scabrum, *Muhl. gram. p.* 61; *Torr. fl.* 1. *p.* 83.

var. *tenuis:* culm geniculate at the base; panicle somewhat elongated, with short erect branches; leaves flat. — A. scabra, *var.* tenuis, *Tuckerm. l. c.*

Perennial. Culm about a foot and a half high, very slender, terete. Lower leaves 4 – 6 inches long, scarcely half a line wide, becoming involute and almost filiform; the upper ones shorter and flat. Panicle 6 – 10 inches long, usually purplish; the branches extremely slender, with the subdivisions trichotomous, hispid. Spikelets scattered at the extremity of the branchlets: pedicels clavate. Glumes about a line and a half long, very acute. Lower palea obtuse, with several very short bristles at the base, sometimes furnished with an inconspicuous slender awn. Upper palea usually wanting. Stamens 3: anthers pale yellow. Stigmas white, plumose. Caryopsis linear, oblong.

Old fields and exsiccated swamps: very common. Var. *cæspitosa*, rocky precipices; var. *scabra*, in woods; var. *tenuis*, on the mountains of Essex county. I am unable to discover in the plants described above, sufficient characters for constituting them distinct species. They seem to be only varieties, caused by differences of soil and exposure.

4. AGROSTIS STRICTA, *Willd.* *Upright-flowered Bent-grass.*

Panicle elongated; the branches verticillate, nearly erect; glumes equal, oblong, acute, a little longer than the flower; paleæ two: the lower one twice as long as the upper, with a geniculate awn from near the base, about twice the length of the palea. — *Willd. sp.* 1. *p.* 366; *Pursh, fl.* 1. *p.* 63; *Muhl. gram. p.* 65; *Torr. fl.* 1. *p.* 85; *Kunth, enum.* 1. *p.* 220. Trichodium strictum, *Roem. & Schult. syst.* 2. *p.* 281.

Culm about a foot high, smooth. Leaves flat, two lines wide, smooth: sheaths close, striate. Panicle oblong, the primary branches verticillate in fives: ultimate divisions rough, bearing the spikelets in a somewhat crowded manner. Glumes rough on the keel. Lower

palea oblong, rather acute, with a tuft of short hairs on each side of the base; the awn very slender, a little bent near the middle: upper palea very manifest, obtuse. Caryopsis obovate.

Sandy field near the outlet of Oneida Lake. I refer this grass, with some hesitation, to *A. stricta*, Willd. It is nearly allied to *A. rupestris*, Willd., but may be only an awned variety of *A. alba*. In the above mentioned locality it seems to be an introduced species.

5. AGROSTIS CANINA, *Linn.* var.? *tenella.* *Bent-grass.*

Panicle loose, somewhat contracted; the branches mostly in threes, slightly hispid; glumes nearly equal, lanceolate, very acute, rough on the keel; lower palea narrowly lanceolate, rather acute, with a geniculate awn rather below the middle; the awn about twice the length of the flower; upper palea nearly wanting; leaves linear, flat.

Culm about a foot high, slender, smooth. Leaves a little more than a line wide, nearly smooth, as are the sheaths: ligule oblong. Panicle 3 – 4 inches long, very slender; the branches somewhat flexuous. Spikelets somewhat larger than in *A. laxiflora*. Glumes narrowly lanceolate, smooth on the sides. Lower palea with a few very short hairs at the base, rather shorter than the glumes; the awn on the back geniculate near the middle.

Mountains in the northern part of the State. *Fl.* early in August. This grass differs from *A. canina* in its less diffuse panicle, narrow glumes and flat leaves, and yet I know of no other species to which it is more nearly allied.

20. BRACHYELYTRUM. *Beauv. Agrost. p.* 39. *t.* 9. *f.* 2. *BRACHYELYTRUM.*

[From the Greek, *brachys*, short, and *elytron*, a covering; in allusion to the short glumes.]

Glumes 2, very minute; the lower one scarcely perceptible. Lower palea with a long bristle at the summit; the upper one with a clavate pedicel or rudimentary flower at the base. — A perennial grass, with a simple contracted panicle.

1. BRACHYELYTRUM ARISTATUM, *Beauv.* *Awned Brachyelytrum.*

Beauv. l. c.; Torr. fl. 1. *p.* 102. Muhlenbergia erecta, *Schreb. gram.* 2. *t.* 50; *Pursh, fl.* 1. *p.* 61; *Ell. sk.* 1. *p.* 96; *Muhl. gram. p.* 57; *Bigel. fl. Bost. p.* 27; *Beck, bot. p.* 391; *Darlingt. fl. Cest. p.* 58. M. aristata, *Pers. syn.* 1. *p.* 76; *Kunth, enum.* 1. *p.* 203. M. Brachyelytrum, *Trin. diss.* 1. *p.* 88. Dilepyrum aristosum, *Michx. fl.* 1. *p.* 40.

Rhizoma creeping. Culm simple, 2 – 3 feet high, pubescent about the nodes. Leaves about 6 inches long and 4 – 6 lines wide, somewhat hairy, ciliate on the margin; sheaths loose: ligule oblong, lacerated. Panicle racemose, erect. Spikelets nearly half an inch long (excluding the awn). Lower glume almost wanting; the upper many times shorter than the paleæ, lanceolate. Paleæ lanceolate-linear, rough, somewhat hairy at the base; lower one 5-nerved, terminating in a straight bristle about three-fourths of an inch long; the upper with a groove on the back, in which is lodged a slender awn-like pedicel. Stamens 2: stigmas linear, very long. Scales ovate, obtuse. Caryopsis oblong, acute.

Rocky woods and hill-sides: frequent. *Fl.* June – July.

TRIBE VI. *ARUNDINACEÆ. Kunth.*

Spikelets either one-flowered (with or without an abortive pedicel), or many-flowered. Flowers usually with long soft hairs at the base. Glumes and paleæ 2, membranaceo-herbaceous. — Mostly tall perennial grasses.

21. CALAMAGROSTIS. *Adans.; Trin. diss.* 1. *p.* 133. *SMALL-REED.*

[From the Greek, *calamos*, a reed, and *agrostis*, a genus of grasses.]

DEYEUXIA, *Beauv.*

Spikelets one-flowered. Glumes longer than the paleæ. Paleæ somewhat equal, with long hairs at the base, and an abortive pedicel or rudimentary flower; the lower one with a short awn near the top or on the back. — Panicle branching; the spikelets all pedicellate.

1. CALAMAGROSTIS CANADENSIS, *Beauv.* (Plate CL.) *Canadian Small-reed.*

Panicle oblong, loose; glumes nearly equal, serrulate on the keel, a little rough on the sides; paleæ as long as the glumes, the lower one with a somewhat exserted awn on the back below the middle; hairs as long as the paleæ; culm and leaves smooth. — *Beauv.; Torr. in Gray's Gram. & Cyp. part* 1, *no.* 18; *Darlingt. fl. Cest. p.* 62; *Kunth, enum.* 1. *p.* 237, not of *Nutt.* C. Mexicana, *Nutt. gen.* 1. *p.* 46 (excl. syn. *Pers.*); *Beck, bot. p.* 401. Arundo Canadensis, *Michx. fl.* 1. *p.* 73; *Pursh, fl.* 1. *p.* 86; *Torr. fl.* 1. *p.* 83; *Bigel. fl. Bost. p.* 38. C. Purshii, *Kunth, enum.* 1. *p.* 208. A. confinis, *Willd. enum.* 1. *p.* 127 (fide *Muhl.*). A. cinnoides, *Muhl. gram. p.* 187. A. agrostoides, *Pursh, l. c.*

Culm 2 – 4 feet high, mostly simple. Leaves a foot long and 3 – 4 lines wide, flat, somewhat glaucous, slightly pubescent above, smoothish underneath; sheaths close: ligule oblong, lacerate. Panicle erect, at length somewhat expanding; the branches 4 – 6 in a whorl, rough. Glumes lanceolate, very acute, keeled; the sides purplish. Paleæ unequal, oblong, rather obtuse: lower one slightly 2-toothed at the summit, awned a little below the middle, the awn projecting beyond the flower: upper one entire. Hairs at the base of the paleæ copious, white. Rudiment small, clavate, with long hairs at the summit. Stamens 3: anthers large, yellow.

Wet meadows: common in the interior of the State, but rare near the seaboard. *Fl.* August.

2. CALAMAGROSTIS COARCTATA, *Torr.* (Plate CLI.) *Glaucous Small-reed.*

Panicle contracted, thick and somewhat conglomerate; glumes narrowly lanceolate, nearly equal, a little longer than the paleæ, carinate; lower palea awned a little below the tip; hairs two-thirds as long as the flower; leaves glaucous. — *Torr. in Gray's Gram. & Cyp. part* 1. *no.* 19; *Darlingt. fl. Cest. p.* 62. C. Canadensis, *Nutt. gen.* 1. *p.* 46; *Trin. diss.* 1. *p.*

227. *t.* 4. *f.* 14; *Beck, bot. p.* 401. Agrostis glauca, *Muhl. gram. p.* 76. Arundo coarctata, *Torr. fl.* 1. *p.* 94; *Bigel. fl. Cest. p.* 39.

Culm 3 – 5 feet high, simple, erect, terete, somewhat glaucous. Leaves 3 – 4 lines wide, flat, rough: ligule oblong, obtuse. Panicle 3 – 4 inches long, erect and compact: branches short, 3 – 5 in a fascicle. Glumes nearly equal, about 3 lines long, lanceolate, acuminate, mostly purplish, rough on the keel, and a little so on the sides: lower one without lateral nerves; upper one 3-nerved. Paleæ about one-fifth shorter than the glumes, lanceolate, acute; the lower one 5-nerved, finally split at the summit, with a short straight rigid awn arising from the back about one-third of the way down. Rudiment stout, with a strong tuft of hairs at the summit. Stamens 3: anthers yellow. Caryopsis hairy.

Wet meadows and open swamps along rivers: frequent. *Fl.* August. This and the following species have the grain sometimes affected with ergot.

3. CALAMAGROSTIS INEXPANSA, *Gray.* (Plate CLII.) *Close-flowered Small-reed.*

Panicle contracted, elongated; glumes oblong-lanceolate; paleæ nearly equal, as long as the glumes, the lower one with a scarcely exserted awn inserted below the middle; hairs nearly as long as the flower; culm and leaves smooth. — *Gray, Gram. & Cyp. part* 1. *no.* 20.

Culm about 3 feet high, erect, terete, simple. Leaves 2 – 3 lines wide, smooth: ligule oblong. Panicle 4 – 6 inches long, slender; the branches short, appressed, 4 or 5 together, rough. Glumes about $2\frac{1}{2}$ lines long, a little serrulated on the keel, roughish on the sides, acute, but not acuminate. Paleæ unequal, rather acute, oblong; the lower one rough, 3-nerved, notched at the tip: awn inserted half way between the middle and the base of the palea. Caryopsis oblong, smooth.

Swamps, northern and western parts of the State. *Fl.* July – August. Near the preceding species; but distinguished by the more slender panicle, broader and less acute glumes, longer hairs, and the awn inserted towards the base of the paleæ.

22. AMMOPHILA. *Host. gram.* 4. *p.* 24; *Kunth, enum.* 1. *p.* 245. *SEA-REED.*

[From *ammos*, sand, and *philos*, a lover.]

PSAMMA, *Beauv.*

Glumes nearly equal, keeled. Paleæ shorter than the glumes, surrounded with short hairs at the base, keeled, awnless. Abortive pedicel plumose above. — Rhizoma long and creeping. Leaves convolute. Panicle spiked, dense, and cylindrical.

1. AMMOPHILA ARUNDINACEA, *Host.* *Common Sea-reed.*

Glumes acute; hairs about one-third the length of the paleæ. — "*Host. gram.* 4. *p.* 24. *t.* 41;" *Kunth, enum.* 1. *p.* 245; *Hook. fl. Bor. Am.* 2. *p.* 241. Arundo arenaria, *Linn. sp.* 1. *p.* 121; *Michx. fl.* 1. *p.* 73; *Pursh, fl.* 1. *p.* 87; *Muhl. gram. p.* 88; *Bigel. fl. Bost. p.* 39. Psamma littoralis, *Beauv. agrost. p.* 143. *t.* 6. *f.* 1. P. arenaria, *Rœm. & Schult.*

syst. 2. *p.* 845; *Torr. fl.* 1. *p.* 95. Calamagrostis arenaria, *Trin. diss.* 1. *p.* 227; *Gray's Gram. & Cyp. part* 1. *no.* 21.

Rhizoma branching and creeping extensively in the sand. Culm 2 – 3 feet high, erect, rigid. Leaves very long, smooth and glaucous, 4 – 5 lines wide, attenuated to a long slender point: sheaths smooth: ligule oblong, obtuse. Panicle 6 - 12 inches long, of a whitish color, very close and spike-like. Spikelets much compressed, about half an inch long. Glumes linear-lanceolate, rough on the thin keel: lower one with a single nerve; the upper 3-nerved. Paleæ resembling the glumes, the hairs at the base scarcely one-third the length of the flower: lower one often with a slight mucro a little below the tip, obscurely 5-nerved. Stamens 3: anthers linear, large, yellow. Styles very short: stigmas simply plumose. Scales linear-lanceolate, somewhat longer than the caryopsis.

Sandy seacoast of Long Island and Staten Island: very abundant. *Fl.* August. This grass is common on the coast of Europe and North America. Its long creeping rhizoma and fibrous roots enable it to confine the loose sands of the shore, and thus to resist the inroads of the sea. In Holland, France and other countries, it is planted for this purpose. It is used in Massachusetts for the manufacture of paper.

23. PHRAGMITES. *Trin. Agrostog. p.* 73; *Endl. gen.* 823. *REED.*

[From the Greek, *phragmos*, a hedge.]

Spikelets 5 – 7-flowered; the flowers perfect, on villous pedicels, except the lowest, which is staminate or neuter, naked at the base, and sessile. Glumes and paleæ very unequal. Upper palea elongated, acuminate. — Very tall broad-leaved grasses, with the flower in a large terminal panicle.

1. PHRAGMITES COMMUNIS, *Trin.* *Common Reed.*

Spikelets 3 – 5-flowered; panicle loose and one-sided. — *Trin. fund. p.* 134; *Torr. fl.* 1. *p.* 103; *Kunth, enum.* 1. *p.* 251. Arundo Phragmites, *Linn. sp.* 1. *p.* 81; *Pursh, fl.* 1. *p.* 86; *Muhl. gram. p.* 88; *Bigel. fl. Bost. p.* 39; *Beck, bot. p.* 405; *Darlingt. fl. Cest. p.* 61.

Culm 6 – 12 feet high, an inch or more in diameter at the base, very leafy, terete, with numerous joints. Leaves 12 – 18 inches long and about 2 inches wide, flat, smooth: ligule very short, fimbriate. Panicle very large, loose, somewhat nodding. Glumes lanceolate, acuminate; the lower one much longer. Lowest flower usually monandrous or neuter; the other flowers perfect, with the silky hairs about two-thirds as long as the paleæ. Lower palea not one-third the length of the upper.

Borders of ponds and swamps: not common. *Fl.* August. This is the largest grass in the Northern States, appearing at a distance like *broom-corn*. It is found in most parts of the world.

TRIBE VII. *CHLORIDEÆ. Kunth.*

Spikelets arranged in unilateral digitate or paniculate (rarely solitary) spikes, 1 – many-flowered; the upper flowers imperfect. Glumes and palea 2, membranaceo-herbaceous; the latter often awned. — Rachis not articulated.

21. ELEUSINE. *Gært. fruct.* 1. *p.* 8. *t.* 1. *f.* 12; *Endl. gen.* 841. DOG'S-TAIL GRASS.

[From *Eleusis*, a name of Ceres, the goddess of harvests.]

Spikes digitate, unilateral. Spikelets sessile, 2 – 6-flowered. Glumes carinate, shorter than the flowers; the lower one interior. Paleæ unequal, awnless: the lower one keeled; upper channelled on the back. Seed transversely rugose. — Mostly annual grasses, gowing in tufts, or branching from the base.

1. ELEUSINE INDICA, *Gært.* *Yard-grass. Wire-grass.*

Culms oblique, compressed, branching from the base; leaves smooth; ligule hairy; spikes 2 – 4; spikelets about 5-flowered. — *Gært. l. c.; Lam. ill.* 1. *p.* 203. *t.* 48. *f.* 3; *Michx. fl.* 1. *p.* 64; *Pursh, fl.* 1. *p.* 87; *Ell. sk.* 1. *p.* 175; *Muhl. gram. p.* 133; *Torr. fl.* 1. *p.* 134; *Beck, bot. p.* 414; *Darlingt. fl. Cest. p.* 81; *Kunth, enum.* 1. *p.* 272. Cynosurus Indicus, *Linn. sp.* 1. *p.* 72.

Annual. Culm 8 – 15 inches long. Leaves distichous, linear, expanding, pubescent above, smooth underneath: sheaths loose, hairy at the throat. Spikes sometimes 5 or 6, but more commonly 2 – 4, rarely solitary: rachis linear, bearded at the base. Spikelets closely imbricate. Upper glume 5-nerved, broader than the lower. Paleæ smooth; the lower one-third longer than the upper. Seed conspicuously wrinkled transversely.

Cultivated grounds, and about houses: common. Flowers through the season. This grass is found in most parts of the world, but appears to be an introduced species with us.

25. SPARTINA. *Schreb. gen.* 98; *Endl. gen.* 846. CORD-GRASS. MARSH-GRASS.

[Said to be named from its resemblance to *Lygeum Spartium*.]

LIMNETIS, *Pers.*; TRACHYNOTIA, *Michx.*

Spikelets in unilateral spikes, one-flowered, much compressed. Glumes and paleæ unequal, awnless. Styles mostly united below. — Perennial, erect marsh grasses.

1. SPARTINA CYNOSUROIDES, *Willd.* (Plate CLIII.) *Tall Marsh-grass.*

Spikes numerous (8 – 40), pedunculate, scattered, forming a long secund panicle ; leaves very long, tapering to a filiform extremity, at first flat, but at length more or less convolute ; glumes serrulate on the keel, with a long slender point ; style 2-cleft at the summit. — *Willd. enum.* 1. *p.* 80 ; *Bigel. fl. Bost. p.* 24 ; *Torr. fl.* 1. *p.* 69 ; *Trin. diss.* 1. *p.* 163 ; *Beck, bot. p.* 405 ; *Darlingt. fl. Cest. p.* 61 ; *Kunth, enum.* 1. *p.* 278. S. polystachya, *Muhl. gram. p.* 53. Dactylis cynosuroides, *Linn. sp.* 1. *p.* 71. Trachynotia cynosuroides and polystachya, *Michx. fl.* 1. *p.* 64. Limnetis cynosuroides and polystachya, *Pers. syn.* 1. *p.* 72 ; *Pursh, fl.* 1. *p.* 59.

Culm 3 – 8 feet high, often nearly an inch in diameter at the base, terete. Leaves 1 – 2 feet or more in length, 4 – 8 lines wide, at first flat, but finally (especially in dry weather) convolute ; sheaths smooth : ligule bearded. Spikes linear, about 3 inches long, scattered or alternate ; the scabrous peduncles 6 – 10 lines long, spreading at maturity. Spikelets arranged on two sides of a depressed triangular rachis. Glumes linear-lanceolate, strongly spinulose on the keel ; the lower narrower and sometimes very short : upper one twice or three times as long as the lower, tapering to a long rough subulate point. Paleæ mostly longer than the lower glume, nearly equal ; the lower one spinulose on the keel : upper are only a little rough toward the summit. Stamens 3 : anthers large, linear, yellow. Styles connate except near the summit. Caryopsis linear-oblong, compressed.

Salt marshes, and along the seacoast ; also on the borders of fresh water rivers and lakes. *Fl.* August. Most authors regard *S. polystachya* as a distinct species from *S. cynosuroides ;* but after a new and careful examination of many specimens of these plants from various localities, I have concluded to let them remain as they stand in my Flora of the Northern and Middle States.

2. SPARTINA JUNCEA, *Willd.* *Rush-like Marsh-grass.*

Leaves distichous, convolute, spreading ; spikes few (1 – 3, rarely 4 or 5), on smooth peduncles ; glumes rough on the keel ; palea nearly smooth ; styles distinct almost to the base. — *Willd. enum.* 1. *p.* 81 ; *Muhl. gram. p.* 54 ; *Ell. sk.* 1. *p.* 94 ; *Torr. fl.* 1. *p.* 70 ; *Bigel. fl. Bost. p.* 24 ; *Trin. diss.* 1. *p.* 162 ; *Kunth, enum.* 1. *p.* 279. S. pumila, *Roth.* Trachynotia juncea, *Michx. fl.* 1. *p.* 64. Limnetis juncea, *Pers. syn.* 1. *p.* 72 ; *Pursh, fl.* 1. *p.* 59.

Rhizoma creeping, very long. Culm 1 – 2 feet high, erect, terete, rigid, smooth. Leaves 6 – 10 inches long, smooth, very slender : sheaths close, with a bearded ring at the throat. Spikes mostly 3 ; the lowest distinctly pedunculate, about an inch and a half long. Glumes very unequal ; the lower one linear, scarcely one-third of the upper, nearly smooth ; the upper linear-lanceolate, serrulate on the keel. Paleæ lanceolate, rather obtuse : lower one a little rough on the keel ; the upper smoothish. Stamens 3 : anthers large, linear. Styles elongated, distinct except near the base.

Salt marshes, and on the sandy shores of rivers near the salt water. *Fl.* July – August. This grass forms a portion of our salt hay.

3. SPARTINA ALTERNIFLORA, *Loisel.* *Smooth Marsh-grass.*

Leaves channelled, erect; spikes numerous, elongated, sessile, appressed; glumes and paleæ nearly smooth; styles distinct nearly to the base. — *Loisel. fl. Gall.* 2. *p.* 719 (1807), fide *Hook.*; *Bromf. in Hook. comp. bot. mag.* 2. *p.* 254. S. glabra, *Muhl. gram. p.* 54; *Ell. sk.* 1. *p.* 95; *Bigel. fl. Bost. p.* 25; *Torr. fl.* 1. *p.* 70; *Beck, bot. p.* 417. S. lævigata, "*Link, jahrb.* 3. *p.* 92"; *Kunth, enum.* 1. *p.* 278. S. polystachya, *Trin. diss.* 1. *p.* 163, not of *Willd.* Dactylis maritima, *Walt. fl. Car. p.* 77.

Rhizoma creeping extensively. Culm 3 – 5 feet high, erect, terete, tender and somewhat succulent, of a yellowish green color. Leaves broad at the base, continuous with the loose open sheaths, tapering to a long point, mostly overtopping the spikes: ligule a bearded ring. Spikes 6 – 14, unequal, closely appressed to the common rachis; each partial rachis produced beyond the summit of the spike, into a long subulate point. Glumes very unequal; the upper one-half or one-third longer than the lower, sometimes sparingly and minutely spinulose on the keel, as seen under a lens. Paleæ linear-lanceolate, unequal: lower one shorter; the upper about the length of the larger glume. Stamens 3. Styles filiform, sometimes shining, but not united except toward the base.

Borders of salt marshes, and muddy places within the reach of salt or brackish water, mostly in places that are overflowed with the tide. *Fl.* August – September. This species grows also in France and in England, but only in a single locality in each country, where it may have been introduced from North America in ballast. It is greedily eaten by horses and cattle; but its strong, rancid smell, affects (says Elliott) the breath, milk, butter, and even the flesh of the cattle that feed on it. For thatching, it much outlasts wheat straw.

26. BOUTELOUA. *Lagasca, "varied. de Cienc."* *BOUTELOUA.*

[Probably named after some obscure Spanish botanist.]

EUTRIANA, *Trin.*; DINEBA, *Beauv.*; ATHEROPOGON, *Muhl.*

Spikes short, disposed in a raceme. Spikelets unilateral, nearly sessile, alternate, 2 – 3-flowered; the terminal flower imperfect. Glumes 2, membranaceous, keeled; the upper one larger, shorter than the flowers. Paleæ 2, the lower one 3-cleft, the segments subulate or awned. Abortive flower pedicellate. — Rachis produced beyond the summit of the spikes.

1. BOUTELOUA RACEMOSA, *Lag.* *Racemed Bouteloua.*

Culm erect; spikes numerous, racemose, rather distant, somewhat reflexed; spikelets 2- (rarely 3-) flowered; lower palea of the perfect flower tricuspidate; abortive flower with 3 bristles. — *Lag. l. c.* Chloris curtipendula, *Michx. fl.* 1. *p.* 159; *Willd. sp.* 4. *p.* 927. Atheropogon apludoides, *Muhl. in Willd. sp. l. c. and gram. p.* 287; *Pursh, fl.* 1. *p.* 75;

Nutt. gen. 1. *p.* 78; *Torr. in Sill. jour.* 4. *p.* 58, & *fl.* 1. *p.* 139; *Beck, bot. p.* 414; *Darlingt. fl. Cest.* (*ed.* 1.) *p.* 17 (with a figure). Eutriana curtipendula, *Trin. diss.* 1. *p.* 243; *Kunth, enum.* 1. *p.* 280. Cynosurus secundus, *Pursh, l. c.* 2. *p.* 728.

Perennial. Culm 2 – 3 feet high, geniculate at the base, smooth, terete. Leaves 2 – 3 lines wide, tapering to a long slender point, involute when dry, rough on the margin, slightly hairy above: sheaths rather loose, the lowest ones often hairy: ligule short, fimbriate. Spikes 20 – 40, about one-third of an inch long, on very short peduncles, arranged on two sides of a common rachis, at length secund; each containing 6 – 8 spikelets, which are in 2 rows, the partial rachis ending in a long naked point. Lower glume persistent, very narrow; the upper lanceolate, hispid on the keel. Perfect flower sessile, lanceolate; the lower palea with 3 nearly equal points: upper a little longer, 2-keeled, bifid at the apex. Stamens 3: anthers bright cinnabar color. Caryopsis oblong. Abortive flower neuter, pedicellate: lower palea ovate, bifid, with a straight rigid bristle, twice as long as the flower, between the teeth: lateral bristles shorter, one proceeding from the base on each side of the infolded margin: upper palea much smaller, 2-cleft, often rudimentary.

Dry rocky lands and hill-sides, Orange and Dutchess counties. *Fl.* August. The large bright red anthers make this a conspicuous grass at the time of flowering. It is admirably figured in the work of Dr. Darlington, above quoted.

TRIBE VIII. *AVENACEÆ. Kunth.*

Spikelets 2 - 10-flowered: terminal flower commonly imperfect. Glumes and paleæ 2, membranaceo-herbaceous: lower palea usually with a twisted awn on the back.

27. AIRA. *Linn.; Nutt. gen.* 1. *p.* 61. HAIR-GRASS.

[From the Greek, *aïro*, to destroy. The name was applied by the ancients to *Lolium temulentum*, on account of its poisonous qualities, and is with no propriety given to this genus.]

DESCHAMPSIA, *Beauv.*

Spikelets 2 – 3-flowered. Glumes unequal. Paleæ thin and membranaceous; the lower one awned on the back below the middle. — Panicle compound, usually spreading; the third flower, when present, imperfect.

* AIRA proper. *Lower palea rather acute, nearly entire. Awn twisted below.*

1. AIRA FLEXUOSA, *Linn.* *Common Hair-grass.*

Panicle spreading, trichotomously branching; flowers scarcely longer than the glumes; awn geniculate, larger than the flower; leaves setaceous. — *Linn. sp.* 1. *p.* 65; *Pursh, fl.* 1. *p.* 77; *Muhl. gram. p.* 85; *Ell. sk.* 1. *p.* 151; *Torr. fl.* 1. *p.* 132; *Beck, bot. p.* 402; *Darlingt. fl. Cest. p.* 64; *Kunth, enum.* 1. *p.* 290.

Culm 1 – 2 feet high, smooth. Leaves mostly in a radical tuft, 5 – 8 inches long, involute, very slender. Panicle capillary, loose; the lower branches somewhat verticillate. Glumes whitish, tinged with purple, oblong-lanceolate. Flowers both perfect, with a tuft of hairs at the base. Lower palea 2-nerved; the awn arising from near the base, and about one-half longer than the flower: upper palea notched at the summit.

Dry rocky places, and in sandy pine woods: very common. *Fl.* June. A native also of Europe.

2. AIRA ATROPURPUREA, *Wahl.* *Purple Alpine Hair-grass.*

Leaves flat; panicle divaricate, of few spikelets; flowers much shorter than the glumes; paleæ a little hairy at the summit; awn from the middle of the back, nearly twice as long as the flowers. — *Wahl. fl. Lapp. p.* 37; *Hook. fl. Bor.-Am.* 2. *p.* 243; *Kunth, enum.* 1. *p.* 291.

Culm 8 – 15 inches high, simple, erect, slender. Leaves 2 – 3 inches long, 1 – 2 lines wide, smooth on both sides: sheaths smooth: ligule oblong, obtuse. Panicle loose; the branches mostly in pairs and flexuous. Spikelets broadly ovate. Glumes about 3 lines long, often purplish, but sometimes yellowish-green, ovate-lanceolate, acuminate, a little roughened on the sides, and minutely serrulate on the sharp keel. Flowers 2, perfect, with long hairs at the base; the upper one on a short, thick pedicel, scarcely half the length of the glumes, their awns included. Lower palea ovate, obtuse, with summit a little hairy; the awn thick, and slightly twisted below.

High mountains of Essex county. *Fl.* early in August. This interesting grass seems to be identical with the Lapland plant of the same name.

** DESCHAMPSIA, Beauv. *Upper palea somewhat truncate and 4-toothed at the summit. Awn short, straight.*

3. AIRA CÆSPITOSA, *Linn.* *Tufted Hair-grass.*

Leaves flat; panicle finally diffuse; flowers about as long as the glumes; awn short, straight. — *Linn. sp.* 1. *p.* 64; *Pursh, fl.* 1. *p.* 77; *Muhl. gram. p.* 85; *Torr. fl.* 1. *p.* 132; *Beck, bot. p.* 402; *Darlingt. fl. Cest. p.* 65. A. ambigua, *Michx. fl.* 1. *p.* 61. A. aristulata, *Torr. l. c.* Deschampsia cæspitosa, *Beauv. Agrost. p.* 91. *t.* 18. *f.* 3; *Kunth, enum.* 1. *p.* 286.

Culm 2 – 3 feet high, erect. Leaves a line or more in breadth, rough above, smooth underneath: sheaths smooth. Panicle oblong or pyramidal: lower branches about 5; upper ones in threes. Glumes rather acute, of a leaden or dull purplish color. Flowers 2, hairy at the base, both perfect; the upper one on a hairy pedicel. Lower palea obtuse and lacerately toothed at the summit; the slender awn at its base scarcely as long as the flower. Sometimes there is a plumose abortive pedicel at the base of the upper flower.

Shores of small lakes in the western parts of the State. *Fl.* June. This is a common European species.

28. TRISETUM. *Pers.; Kunth, enum.* 1. *p.* 295. *TRISETUM.*

[So named from the Latin, in allusion to the three bristles of the flowers.]

Spikelets 2 – 4-flowered. Glumes membranaceous, keeled, awnless. Paleæ herbaceous: lower one with 2 long cusps at the summit, and a twisted awn on the back; upper one bicarinate. Caryopsis smooth, without a longitudinal groove. — Mostly alpine or sub-alpine grasses. Leaves flat. Panicle contracted, rarely diffuse.

1. TRISETUM MOLLE, *Kunth.* (Plate CLIV.) *Soft Trisetum.*

Whole plant minutely and softly pubescent; panicle contracted and somewhat spiked; glumes 2-flowered, the flowers not bearded; awn about the length of the palea, not twisted, diverging or recurved. — *Kunth,* "*gram.* 1. *p.* 101," *and enum.* 1. *p.* 298; *Trin. act. Petrop.* (1830), 1. *p.* 64. T. subspicatum, *Beck, bot. p.* 403. Avena mollis, *Michx. fl.* 1. *p.* 72.

Perennial. Culm 12 – 15 inches high, mostly cespitose, erect, slender; the pubescence mostly retrorse. Leaves narrowly linear, 1 – 2 inches long, hairy at the base. Panicle 2 – 3 inches long; the branches appressed, and rather densely flowered. Glumes a little unequal, lanceolate, acute, rough on the keel. Lower palea with 2 long sharp cusps at the summit; the awn arising between the cusps, and about the length of the entire palea.

Rocky banks of rivers, and on mountains; northern and western parts of the State. *Fl.* July. Very nearly allied to *T. subspicatum*, and regarded by Beck and Hooker as identical with that species.

29. AVENA. *Linn.; Kunth, enum.* 1. *p.* 299. *OAT.*

[A name of doubtful origin.]

Spikelets 3 – many-flowered; the flowers rather remote, the uppermost imperfect. Glumes thin and membranaceous. Paleæ herbaceous; the lower one with a twisted awn above the base, mostly bifid at the summit. Caryopsis with a longitudinal groove on one side, hairy at the summit.

1. AVENA PENNSYLVANICA, *Linn.* *Pennsylvania Wild-oat.*

Panicle attenuated, loose, nodding, the branches somewhat verticillate; spikelets 2 – 3-flowered; the flowers smooth (lowest one often awnless), upper one on a hairy pedicel; lower palea with a slender awn below the bifid tip, about twice the length of the flower. — *Linn. sp.* 1. *p.* 79; *Willd. sp.* 1. *p.* 445; *Kunth, enum.* 1. *p.* 303. A. palustris, *Michx. fl.* 1. *p.* 72; *Pursh, fl.* 1. *p.* 86; *Muhl. gram. p.* 186; *Kunth, l. c.*; *Darlingt. fl. Cest. p.* 67. Trisetum Pennsylvanicum, *Beauv. agrost. p.* 154. Trisetum palustris, *Torr. fl.* 1. *p.* 126; *Trin. act. Petrop.* (1830), 1. *p.* 67; *Beck, bot. p.* 403. Aira pallens, *Muhl. l. c.*; *Ell. sk.* 1. *p.* 151.

Perennial. Culm 2 – 3 feet high, slender, erect. Leaves flat, 2 – 3 inches long : ligule oblong. Panicle oblong, yellowish green. Spikelets ovate, much compressed, mostly 2-flowered, with an abortive rudiment. Glumes nearly equal, shorter than the flowers, acuminate or mucronate, rough on the keel. Upper perfect flower on a hairy pedicel. Lower palea lanceolate, acuminate, bicuspidate : awn slender, inserted below the tip, twisted : upper palea shorter, lacerate at the tip.

Wet meadows : rare. *Fl.* June. This grass does not accord in all respects with the characters of AVENA, but it rather belongs to that genus than to TRISETUM or AIRA.

2. AVENA STRIATA, *Michx.* *Purple Wild-oat.*

Panicle nearly simple, loose, few-flowered ; spikelets 3 – 5-flowered, somewhat terete, the flowers bearded at the base ; lower palea with a slender nearly straight awn below the tip. — *Mich. fl.* 1. *p.* 73 ; *Beck, bot. p.* 403 ; *Kunth, enum.* 1. *p.* 303 ; *Hook. fl. Bor.-Am.* 2. *p.* 244, not of *Lam.* Trisetum purpurascens, *Torr. fl.* 1. *p.* 127.

Perennial. Culm 2 – 3 feet high, erect, simple, smooth. Leaves 3 – 4 inches long, and about 2 lines wide, smooth ; the sheaths close, conspicuously striate : ligule short. Panicle 3 – 6 inches long, consisting of few nearly simple branches, each bearing 1 – 3 spikelets. Flowers rather remote, each with a tuft of short hairs at the base. Glumes unequal, of a reddish purple color, acute ; the lower one indistinctly 3-nerved ; upper 5-nerved. Lower palea strongly 7-nerved, attenuated and 2-cleft at the summit ; the awn bent obliquely : upper palea lanceolate, much shorter than the lower, entire, ciliate on the margin.

Banks of rivers, and moist woods : northern and western counties. *Fl.* July.

30. ARRHENATHERUM. *Beauv. Agrost. p.* 55 ; *Kunth, enum.* 1. *p* 307. OAT-GRASS.

[From the Greek, *arrhen*, male, and *ather*, an awn ; the staminate flower being awned.]

Spikelets 2-flowered : lower flower staminate ; the lower palea with a twisted awn below the middle. Upper flower perfect ; the lower palea with a short straight bristle below the tip. — Panicle loose.

1. ARRHENATHERUM AVENACEUM, *Beauv.* *Grass of the Andes. Oat-grass.*

Beauv. Agrost. p. 55. *t.* 11. *f.* 5 ; *Torr. fl.* 1. *p.* 130 ; *Kunth, enum.* 1. *p.* 307. A. Kentuckense, *Torr. l. c.* Avena elatior, *Linn.* ; *Muhl. gram. p.* 185 ; *Bigel. fl. Bost. p.* 33 ; *Beck, bot. p.* 403 ; *Darlingt. fl. Cest. p.* 66.

Perennial. Rhizoma creeping. Culms 2 – 3 feet high. Leaves roughish on the margin ; sheaths smooth : ligule short. Panicle oblong, at first somewhat contracted, finally spreading ; the branches in threes or semiverticillate. Spikelets brownish. Glumes unequal ; the lower one shorter than the flowers. Awn of the staminate flower much contorted. Lower palea of the perfect flower sometimes awnless : upper palea with an awnlike rudiment or continuation of the rachilla at its base.

Pastures and cultivated grounds. *Fl.* May – June. A tall handsome grass ; originally from Europe, but naturalized in a few places. It has been cultivated by some of our farmers, but is of little value either for hay or for pasture.

31. DANTHONIA. *DC. fl. Gall.* 3. *p.* 33 ; *Kunth, enum.* 1. *p.* 311. *DANTHONIA.*

[Named in honor of M. DANTHOINE, a French botanist.]

Spikelet 2 – 10-flowered ; the upper flowers often imperfect. Glumes somewhat membranaceous, nearly equal, mostly longer than the flower. Lower palea coriaceo-membranaceous, many-nerved, 2-toothed at the summit, with a short or a twisted awn between the teeth : upper palea bicarinate. — Cespitose grasses ; the spikelets pedicellate, usually few, in a racemose panicle.

1. DANTHONIA SPICATA, *Beauv.* *Wild Oat-grass.*

Culm erect ; leaves subulate ; lower sheaths hairy at the throat ; panicle racemose, nearly simple ; spikelets 7 – 9, about 7-flowered ; lower palea hairy. — *P. de Beauv. l. c.* ; *Nutt. gen.* 1. *p.* 71 ; *Torr. fl.* 1. *p.* 125 ; *Trin. ic. gram.* 5. *t.* 54 ; *Beck, bot. p.* 405 ; *Darlingt. fl. Cest. p.* 68 ; *Kunth, enum.* 1. *p.* 312. Avena spicata, *Linn. sp.* 1. *p.* 119 ; *Pursh, fl.* 1. *p.* 86 ; *Muhl. gram. p.* 184 ; *Bigel. fl. Bost. p.* 32.

Perennial. Culms 1 – 1½ foot high, slender, mostly erect. Leaves very narrow, flat or involute, more or less hairy ; the lower ones numerous : sheaths hairy at the base and at the throat : ligule very short. Panicle secund, the lower branches often a little divided. Glumes lanceolate ; the lower one 3-nerved, attenuated at the point. Lower palea ovate, obscurely 7-nerved, thinly clothed with long hairs, the margins produced into 2 lanceolate teeth : awn about twice as long as the palea, flat and spirally twisted at the base : upper palea oblong, the margin closely inflected. Scales obtuse or truncate. Caryopsis a little corrugated, somewhat 2-horned at the apex.

Dry open woods and in fields. *Fl.* June – July.

32. URALEPIS. *Nutt. gen.* 1. *p.* 62 ; *Torr. fl.* 1. *p.* 117. *URALEPIS.*

[From the Greek, *oura*, a tail, and *lepis*, a scale ; from the appearance of the lower palea.]

TRIPLASIS, *Beauv.*? DIPLOCEA, *Raf.*

Spikelets 2 – 3-flowered, somewhat terete ; the flowers distant ; uppermost one abortive. Glumes much shorter than the flowers. Paleæ very unequal, conspicuously villous on the margin : lower one bicuspidate, with a straight awn between the cusps ; the upper entire, ovate, incurved. Caryopsis gibbous. — Annual grasses, growing in sand. Panicles simple, racemose, small ; the spikelets purple.

1. URALEPIS ARISTULATA, *Nutt.* *Short-awned Uralepis.*

Lateral panicles concealed in the sheaths of the leaves, terminal one more or less exserted; spikelets 3-flowered; awn as long as the lateral cusps. — *Nutt. gen. l. c.* and *suppl.*; *Torr. fl.* 1. *p.* 117; *Spreng. neue entd.* 1. *p.* 245; *Beck, bot. p.* 404; *Kunth, enum.* 1. *p.* 318. Aira purpurea, *Muhl. gram. p.* 86, not of *Walt.* Diplocea barbata, *Ref. in Sill. jour.* 1. *p.* 252.

Culms numerous, from one root, about a foot high, with numerous bearded joints. Leaves short, subulate and somewhat pungent, mostly shorter than the joints, hairy above. Ligule a bearded ring. Upper panicle, when exserted, spreading: lateral ones entirely concealed in the sheaths of the leaves. Spikelets mostly 3- (rarely 4-) flowered. Glumes often lacerate at the tip. Paleæ densely fringed; the lower one with 2 cusps, and a very short intermediate awn. Stamens 3: anthers purple.

Seacoast of Long Island and Staten Island; also along the shores of the Hudson, within the reach of salt water. *Fl.* August – September. The whole plant is covered with a viscid acid secretion, which is perhaps bimalate of lime. I am suspicious that this species is hardly distinct from *U. purpurea*, Nutt.

TRIBE IX. *FESTUCACEÆ. Kunth.*

Spikelets many- (rarely few-) flowered. Glumes and paleæ 2, *membranaceo-herbaceous, rarely coriaceous. Lower palea mostly awned; the awn not twisted. Inflorescence (with few exceptions) paniculate.*

33. POA. *Linn.; Kunth, enum.* 1. *p.* 324. *MEADOW-GRASS.*

[*Poa* is the Greek name for grass or pasturage.]

Spikes 2 – many-flowered; the spikelets distichous. Glumes 2, pointless, shorter than the flowers. Paleæ membranaceous, awnless; the lower one keeled, rarely concave and somewhat coriaceous: upper one bicarinate. Stigmas simply plumose. Caryopsis free. — Leaves mostly flat. Spikelets pedicellate, in diffuse or contracted panicles. Flowers sometimes dicœcious.

* POA proper. *Spikelets paniculate, 2 – 5-flowered, rather remote, mostly with a cobwebby pubescence at the base: lower palea herbaceous, diaphanous on the margin, mostly* 5- (*rarely* 1 – 7-) *nerved.*

1. POA ANNUA, *Linn.* *Annual Meadow-grass.*

Panicle somewhat secund, divaricate; spikelets ovate-oblong, 4 – 5-flowered; the flowers free; culm oblique, somewhat compressed; root fibrous. — *Linn. sp.* 1. *p.* 68; *Ell. sk.* 1. *p.* 158; *Pursh, fl.* 1. *p.* 79; *Muhl. gram. p.* 137; *Torr. fl.* 1. *p.* 107; *Beck, bot. p.* 409; *Darlingt. fl. Cest. p.* 76; *Kunth, enum.* 1. *p.* 349.

Annual. Culms cespitose, 3 – 8 inches long, very smooth, oblique or often nearly procumbent. Leaves short, bright green, smooth, keeled : sheaths loose, smooth : ligule oblong. Panicle at length divaricately spreading; the branches mostly solitary. Spikelets rather crowded towards the summit of the branchlets, sometimes 6-flowered. Glumes nearly equal, acute, oblong-lanceolate, acuminate. Paleæ minutely pubescent; the lower one ovate, rather obtuse : upper one a little shorter, pale greenish white, with two green marginal keels.

Cultivated grounds, garden paths, roadsides, etc. *Fl.* April – October. Probably introduced from Europe.

2. Poa laxa, *Hænke.* *Few-flowered Alpine Meadow-grass.*

Panicle contracted, somewhat nodding at the apex, the branches smooth, mostly in pairs; spikelets ovate, about 3-flowered, the flowers acute, hairy and somewhat webbed at the base; leaves narrowly linear, acute; ligules all lanceolate. — *Hænke*, "*fl. Sudet. p.* 118;" *Trin. in act. Petrop.* 6. *ser.* 1. *p.* 374; *Kunth, enum.* 1. *p.* 349. P. flexuosa, *Engl. bot. t.* 1123. P. alpina, *Torr. in Geol. Report.*

Root perennial, fibrous. Culms cespitose, 6 – 8 inches high, erect. Leaves numerous, mostly less than a line wide, glaucous, smooth. Panicle 1 – 2 inches long; the branches flexuous, usually in pairs, but sometimes three together. Spikelets about 2½ lines long, sometimes 4-flowered, but the terminal flower often imperfect. Glumes ovate-lanceolate, nearly equal, slightly rough on the keel; the sides nerveless. Lower palea very hairy below, with indistinct lateral nerves : upper palea rough on the margin.

Summit of Mount Marcy in Essex county. *Fl.* early in August. This grass appears to be identical with the European plant. It is allied to *P. alpina*, but differs in the contracted panicle, fewer-flowered spikelets, narrower leaves, and in the ligules being all lanceolate.

3. Poa trivialis, *Linn.* *Rough Meadow-grass.*

Panicle equal, diffuse; spikelets oblong-ovate, about 3-flowered; flowers webbed at the base, 5-nerved; culm and sheaths roughish; ligule oblong; root fibrous. — *Linn. sp.* 1. *p.* 67; *Engl. bot. t.* 1072; *Pursh, fl.* 1. *p.* 78; *Torr. fl.* 1. *p.* 110; *Beck, bot. p.* 410; *Kunth, enum.* 1. *p.* 352; *Darlingt. fl. Cest. p.* 75. P. stolonifera, *Muhl. gram. p.* 179.

Perennial. Culm 2 – 3 feet high, often throwing off suckers at the base. Leaves very narrow, pale green : ligules elongated, upper ones acute, the lower obtuse. Panicle large, pyramidal, verticillate; the branches rough. Spikelets sometimes only 2-flowered. Glumes unequal, very acute. Lower palea 5-nerved, scarious at the apex.

Moist meadows : frequent. *Fl.* June – August. A naturalized European grass. It is good for pasturage or hay, but much inferior to *P. pratensis*. It is easily distinguished from that species by the rough culms, long ligules, and fibrous roots.

4. Poa pratensis, *Linn.* *Smooth-stalked or Green Meadow-grass.*

Panicle diffuse; spikelets oblong-ovate, about 4-flowered; the flowers acute, 5-nerved, webbed at the base; culm and sheaths smooth; ligule short; rhizoma creeping. — *Linn. sp.* 1. *p.* 67; *Engl. bot.* 1073; *Pursh, fl.* 1. *p.* 78; *Torr. fl.* 1. *p.* 109; *Bigel. fl. Bost. p.* 33; *Beck, bot. p.* 409; *Kunth, enum.* 1. *p.* 352; *Darlingt. fl. Cest. p.* 74. P. viridis, *Muhl. gram. p.* 138; *Ell. sk.* 1. *p.* 159; *Kunth, l. c.*

Perennial. Culm 2 – 3 feet high. Leaves deep green: lower ones very long; the upper much shorter. Panicle pyramidal; the branches 3 – 5 together, a little rough. Spikelets acute, 3 – 5-flowered, with cobweb-like hairs at the base. Glumes unequal, lanceolate, acute. Lower palea ovate-lanceolate; the upper one rather shorter.

Meadows, pastures, and road-sides: common. *Fl.* May – July. Introduced from Europe. This is considered the best grass for pastures. It so readily takes possession of an enclosed field, that most of our farmers look upon it as indigenous to the soil, but there can be little doubt of its foreign origin.

5. Poa compressa, *Linn.* *Blue-grass. Wire-grass.*

Culm much compressed, decumbent or oblique, rooting at the base; rhizoma creeping; panicle contracted, somewhat secund; spikelets ovate-oblong, 1 – 8-flowered; the flowers webbed at the base, obscurely nerved. — *Linn. sp.* 1. *p.* 69; *Engl. bot. t.* 365; *Michx. fl.* 1. *p.* 69; *Pursh, fl.* 1. *p.* 79; *Muhl. gram. p.* 141; *Bigel. fl. Bost. p.* 33; *Torr. fl.* 1. *p.* 110; *Beck, bot. p.* 410; *Kunth, enum.* 1. *p.* 355; *Darlingt. fl. Cest. p.* 76.

var. *sylvestris:* panicle loose, somewhat spreading; spikelets 2 – 3-flowered; culm slender, nearly erect. *Torr. l. c.*

Perennial. Rhizoma creeping extensively. Culm 12 – 18 inches long, often procumbent and remarkably geniculate at the base. Leaves short, linear, keeled, smooth, of a bluish green color: ligule short and truncate. Panicle at flowering time a little expanded, but commonly contracted and almost spike-like; the branches in pairs or threes, short, flexuous, rough. Spikelets mostly 5 – 6-flowered. Glumes about two-thirds the length of the lowest flower. Lower palea obscurely 5-nerved, a little hairy on the sides and at the base.

Fields, cultivated grounds, and road-sides; var. *sylvestris* in woods: common. *Fl.* June – July. An introduced grass, which is much esteemed for pasturage.

6. Poa pungens, *Nutt.* *Sharp-leaved Meadow-grass.*

Culm compressed; leaves cuspidate, those of the culm very short; panicle nearly simple, spreading; spikelets lanceolate-ovate, 3 – 4-flowered, crowded at the extremity of the branches; flowers webbed at the base, rather obtuse. — *Nutt. gen.* 1. *p.* 66 (in obs.); *Torr. fl.* 1. *p.* 109; *Beck, bot. p.* 409; *Darlingt. fl. Cest. p.* 74. P. autumnalis, *Ell. sk.* 1. *p.* 159?; *Nutt. l. c.* P. flexuosa, *Muhl. gram. p.* 148, not of *Smith.* P. cuspidata, *Bart. fl. Phil.* 1. *p.* 61.

Perennial. Culm 1 – 2 feet high, smooth, somewhat cespitose. Radical leaves long and narrow; those of the culm usually 2, flat, a little rough on the margin: ligule truncate or acuminate. Panicle small; the lower branches spreading, mostly in pairs or threes: upper ones somewhat racemose. Glumes unequal, smooth. Flowers a little distant, slightly pubescent. Lower palea oblong-lanceolate, indistinctly 5-nerved. Caryopsis linear-oblong, somewhat channelled on one side.

Moist rocky places, western part of the State (*Dr. Sartwell*). *Fl.* April – May.

7. Poa nemoralis, *Linn.* *Wood Meadow-grass.*

Panicle slender, a little secund, loose; the branches rough, 2 – 5 together; spikelets ovate-lanceolate, about 3-flowered; the flowers rather distant, hairy and slightly webbed at the base, acute, very obscurely nerved; culm and leaves smooth; ligule almost wanting. — *Linn. sp.* 1. *p.* 69; *Engl. bot. t.* 1265; *Pursh, fl.* 1. *p.* 79?; *Torr. fl.* 1. *p.* 111; *Beck, bot. p.* 410; *Kunth, enum.* 1. *p.* 353.

Rhizoma creeping. Culm 2 feet high, slender. Leaves narrow, pale green. Panicle 5 – 8 inches long, very loose, sometimes a little nodding; the branches semiverticillate, usually several together, flexuous. Spikelets usually 3-flowered, mostly seated on the extremity of the branches, loose; the flowers finally rather distant on the rachilla. Glumes linear-lanceolate, unequal, very acute. Lower palea lanceolate, smooth on the sides, hairy on the back below: upper one strongly bicarinate. Stamens 3: anthers yellow.

Western part of the State (*Dr. Sartwell*). *Fl.* June – July. A native also of Europe.

8. Poa serotina, *Ehrh.* *Red-top.*

Panicle elongated, diffuse, at length somewhat nodding at the apex, the branches mostly verticillate in fives; spikelets ovate-lanceolate, 2 – 3-flowered; flowers a little webbed at the base, yellowish at the tip, obscurely 5-nerved; culm and leaves smooth; rhizoma creeping. — "*Gaud. Agrost.* 1. *p.* 108"; *Torr. fl.* 1. *p.* 110; *Beck, bot. p.* 410; *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 385. P. palustris, *Muhl. gram. p.* 150. P. fertilis, "*Host. Gram.* 3. *p.* 10. *t.* 14," ex *Kunth, enum.* 1. *p.* 353. P. crocata, *Michx. fl.* 1. *p.* 68?

Perennial. Culm 2 – 3 feet high. Leaves flat, 3 – 6 inches long, about 2 lines wide, smooth: ligule elongated. Panicle 6 – 10 inches long; the branches rough and flexuous. Spikelets often 2-flowered. Glumes narrowly lanceolate, very acute, rough on the keel, nearly as long as the lowest flower. Paleæ lanceolate; the lower one rather obtuse, of a dull yellowish color at the tip, entire, slightly hairy at the base: upper palea very acute. Stamens 3.

Wet meadows, valley of the Hudson and western parts of the State. *Fl.* June. This agrees very well with the European *P. serotina*, and is regarded by most of our botanists as the *P. crocata* of Michaux; but in the latter the spikelets are 4 – 5-flowered.

9. Poa debilis. *Weak Meadow-grass.*

Panicle loose, few-flowered, somewhat spreading; the branches mostly in pairs, flexuous, a little rough; spikelets ovate, obtuse, 3-flowered; the flowers webbed at the base, smoothish; lower palea oblong, obtuse, slightly 3-nerved; leaves and sheaths smooth; ligule oblong, acute.

Perennial. Culm 1½ – 2 feet high, erect, slender, terete, smooth. Leaves 1 – 2 lines wide, pale green, flat, rough on the margin: sheaths closely embracing the culm. Panicle oblong, somewhat contracted before and after flowering; the pairs of branches distant or somewhat divided, bearing a few spikelets towards the extremity. Spikelets sometimes only 2-flowered, broadly ovate and obtuse in the outline, pale green. Glumes a little unequal, oblong-lanceolate, rather acute, obscurely 3-nerved. Flowers distinctly webbed at the base, but not elsewhere pubescent. Lower palea slightly discolored at the tip; the keel nearly smooth: upper palea bicarinate, the keels roughish.

Woods, and rocky banks of rivers; northern and western counties. *Fl.* May. *Fr.* June. This is the undescribed grass alluded to in my preliminary report of 1840. It seems to be a well-characterized species, but is allied both to *P. nemoralis* and *P. pungens*.

** Eragrostis, Beauv. *Spikelets paniculate, 5 – many-flowered (rarely 3 – 4-flowered); the flowers free. Lower palea membranaceous, 3-nerved; the upper with ciliate keels, persistent.*

10. Poa Eragrostis, *Linn.* *Strong-scented Meadow-grass.*

Panicle spreading, pyramidal, the lower branches and primary divisions hairy in the axils; spikelets ovate-oblong and linear-lanceolate, 8 – 20-flowered; the flowers obtuse, with strong lateral nerves; glumes nearly equal; culms oblique; sheaths smooth. — *Linn. sp.* 1. *p.* 68; *Pursh, fl.* 1. *p.* 80; *Ell. sk.* 1. *p.* 161; *Torr. fl.* 1. *p.* 115; *Bigel. fl. Bost. p.* 35; *Beck, bot. p.* 412; *Darlingt. fl. Cest. p.* 79. Briza Eragrostis, *Linn. sp.* 1. *p.* 103; *Michx. fl.* 1. *p.* 72; *Pursh, fl.* 1. *p.* 82; *Muhl. gram. p.* 154; *Ell. sk.* 1. *p.* 161. *t.* 10. *f.* 1. Eragrostis major, *Host.* "*gram.* 4. *t.* 24." Megastachya Eragrostis, *Beauv. Agrost. p.* 74; *Kunth, enum.* 1. *p.* 333.

Annual. Culm 12 – 18 inches long, geniculate and branching at the base. Leaves 2 lines wide, smooth underneath, roughish above, flat: sheaths loose, hairy at the throat: ligule short and bearded. Panicle pyramidal, the branches solitary or in pairs. Spikelets varying from ovate to nearly linear, mostly of a leaden color, sometimes 20-flowered or more. Glumes nearly equal, rough on the keel. Lower palea ovate, 3-nerved; the upper one shorter.

Sandy fields, cultivated grounds, road-sides, etc.: frequent. *Fl.* August – September. A naturalized grass, now common in many parts of the United States. When fresh, it emits a peculiar and rather disagreeable odor.

11. Poa pilosa, *Linn.* *Slender Meadow-grass.*

Panicle capillary, pyramidal, the lower branches hairy in the axils; spikelets linear, 5 – 12-flowered, the flowers not webbed at the base; glumes very unequal; upper palea persistent; culms cespitose, oblique, geniculate at the base; leaves hairy at the base. — *Linn. sp.* 1. *p.* 68; *Muhl. gram. p.* 143; *Darlingt. fl. Cest. p.* 78; *Kunth, enum.* 1. *p.* 329. P. pectinacea, *Michx. fl.* 1. *p.* 69; *Pursh, fl.* 1. *p.* 81; *Torr. fl.* 1. *p.* 114; *Beck, bot. p.* 411. P. Eragrostis, *Ell. sk.* 1. *p.* 161 (fide *Curtis*). P. tenella, *Pursh, l. c.; Ell. sk.* 1. *p.* 160? Eragrostis pilosa, *Beauv. Agrost. p.* 71.

Annual. Culm 6 – 12 inches or more in length, branching from the base and forming tufts. Leaves 2 – 4 inches long, flat, smooth, with long white hairs at the throat. Panicle large, loose; the branches a little flexuous: lower ones semiverticillate. Spikelets 2 – 4 lines long, often purplish. Glumes without lateral nerves: lower one minute; the upper rough on the back. Lower palea obscurely 3-nerved; the upper slightly ciliate on the margin, persistent, thus giving the rachis a pectinate or serrated appearance when old. Caryopsis oblong, brown.

Sandy soils, road-sides, and cultivated grounds, in both dry and wet situations; frequent in the neighborhood of New-York, and perhaps introduced from Europe. *Fl.* August – September.

12. Poa reptans, *Michx.* *Creeping Meadow-grass.*

Culm branched and creeping; flowers diœcious; panicle somewhat simple, ovate; spikelets approximated on the short branches, linear-lanceolate, flat, 12 – 20-flowered; flowers acuminate, smooth; lower palea 3-nerved. — *Michx. fl.* 1. *p.* 69. *t.* 11; *Pursh, fl.* 1. *p.* 81; *Muhl. gram. p.* 142; *Ell. sk.* 1. *p.* 163; *Kunth, syn.* 1. *p.* 219, *and enum.* 1. *p.* 336; *Torr. fl.* 1. *p.* 114; *Beck, bot. p.* 411. P. hypnoides, *Lam. ill.* 1. *p.* 185? Eragrostis reptans, *Nees in Mart. fl. Bras.* 1. *p.* 514; *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 410.

Annual. Culm 6 – 15 inches long, creeping and rooting at the joints. Leaves subulate, flat, minutely pubescent above: sheaths loose, striate, a little hairy on the margin and at the throat. Panicle 1 – 2 inches long, more or less contracted. Spikelets much compressed. Glumes unequal, very acute, keeled. Paleæ very unequal; the lower one ovate, with 3 strong green nerves, smooth: upper palea much shorter, ciliate on the keels.

Sandy banks of rivers: on the upper part of the Hudson, and in the western counties. *Fl.* July – August. A delicate and handsome grass. If it should prove to be the *P. hypnoides* of Lamarck, that name, being the older, must be adopted.

13. Poa hirsuta, *Michx.* *Hairy Meadow-grass.*

Panicle very large, capillary; the branches at first expanding, finally reflexed, bearded in the axils; spikelets oblong, 5 – 15-flowered; upper palea ciliate on the double keel; culm erect, simple, compressed; lower sheaths hairy. — *Michx. fl.* 1. *p.* 68; *Pursh, fl.* 1. *p.* 80;

Muhl. gram. p. 145; *Ell. sk.* 1. *p.* 157; *Bigel. fl. Bost. p.* 35; *Torr. fl.* 1. *p.* 113, and *β.* spectabilis, *l. c.*, excl. syn. *Muhl. et Ell.*; *Beck, bot. p.* 411; *Darlingt. fl. Cest. p.* 78; *Kunth, enum.* 1. *p.* 331. P. spectabilis, *Pursh, l.* c.

Annual. Culm 1 – 2 feet high, somewhat rigid, simple or cespitose. Leaves longer than the culm, 2 - 3 lines wide, with a few long hairs towards the base: sheaths bearded at the throat. Panicle often a foot or more in length, very much branched; the primary branches with a tuft of long hairs in the axils. Spikelets purplish, often linear and elongated. Glumes acute, nearly equal, rough on the keel. Lower palea ovate, acute, 3-nerved, roughish; the upper strongly ciliate. Stamens 3. Caryopsis oblong, red.

Sandy fields: Long Island. *Fl.* August – September. A very common grass in the sandy districts of New-Jersey, particularly near the salt water.

14. Poa capillaris, *Linn.* *Hair-panicled Meadow-grass.*

Panicle very large, loose, expanding; the branches capillary and much divided, naked in the axils; spikelets about 3-flowered, ovate, acute; flowers not webbed; culm branched at the base; sheaths hairy at the throat. — *Linn. sp.* 1. *p.* 68; *Michx. fl.* 1. *p.* 67; *Pursh, fl.* 1. *p.* 79; *Muhl. gram. p.* 144; *Ell. sk.* 1. *p.* 156; *Bigel. fl. Bost. p.* 35; *Torr. fl.* 1. *p.* 113; *Beck, bot. p.* 411; *Darlingt. fl. Cest. p.* 77; *Kunth, enum.* 1. *p.* 331.

Annual. Culms often forming very large tufts, 12 – 18 inches high (including the panicle), somewhat compressed. Leaves 1 – 2 lines wide, flat; the sheaths fringed with long hairs on the margin and at the throat: ligule very short, fringed. Panicle 8 – 12 inches long, pyramidal; the branches roughish and very numerous. Spikelets on long capillary peduncles, sometimes 4-flowered. Glumes unequal, lanceolate, acute, rough on the keel. Lower palea ovate, 3-nerved; the upper shorter, entire. Caryopsis ovoid.

Sandy fields and dry hill-sides: not uncommon on the banks of the Hudson. *Fl.* August.

15. Poa dentata, *Torr.* (Plate CLV.)) *Toothed Meadow-grass.*

Culms oblique or decumbent; panicle loose, somewhat spreading; the branches capillary, flexuous; spikelets lanceolate and somewhat terete, about 5-flowered, the flowers rather distant and free; glumes unequal, the upper one 3-nerved and obtuse; lower palea strongly 5-nerved, at length 5-toothed at the apex. — *Torr. fl.* 1. *p.* 107; *Beck, bot. p.* 409. Windsoria pallida, *Torr. in cat. pl. N. York* (1819), *p.* 19. Triodia pallida, *Spreng. neue entd.* 1. *p.* 246. Uralepis? pallida, *Kunth, enum.* 1. *p.* 319.

Perennial. Culms often branching from the base, rooting at the lower joints, 1 – 2½ feet long, terete, smooth. Leaves flat, pale green, somewhat glaucous underneath: sheaths smooth: ligule oblong, obtuse. Panicle weak, nodding when young, with rough branches. Spikelets at first nearly terete, but lanceolate after flowering, acute, all of them on slender pedicels, pale green. Glumes scarious on the margin; the lower one rather acute. Palæ

nearly equal, lanceolate, acute ; the lower one with 5 strong nerves, slightly 5-toothed at the apex : upper palea bifid at the tip. Stamens 3 : anthers pale yellow. Stigmas simply plumose.

Wet sandy places : Island of New-York, and western part of the State ; abundant on the shores of Oneida lake. *Fl.* August – June. Perhaps this species should rather be referred to Glyceria.

*** Aeluropus, Trin. *Spikelets in a contracted spikelike panicle. Lower palea coriaceous, many-nerved, not keeled.*

16. Poa Michauxii, *Kunth.* *Spiked Salt-marsh Poa.*

Culms cespitose, erect ; leaves distichous, involute, spreading, rigid ; panicle contracted, spiked ; spikelets ovate or ovate-oblong, 5 – 10-flowered, smooth ; flowers naked ; lower palea about 9-nerved. — *Kunth,* " *Gram.* 2. *p.* 533. *t.* 181," *and enum.* 1. *p.* 325, not of *Linn.* Uniola spicata, *Linn. sp.* 1. *p.* 71 ; *Ell. sk.* 1. *p.* 166 ; *Muhl. gram. p.* 157 ; *Torr. fl.* 1. *p.* 105 ; *Bigel. fl. Bost. p.* 32 ; *Beck, bot. p.* 413. U. distichophylla, *Rœm. & Schult. syst.* 2. *p.* 596, not of *Labill.* Festuca distichophylla, *Michx. fl.* 1. *p.* 67 ; *Pursh, fl.* 1. *p.* 84. Briza spicata, *Lam. enc.* 1. *p.* 405. Brizopyrum spicatum, *Hook. & Arn. in Beech, voy. p.* 403 ? ; *Hook. fl. Bor.-Am.* 2. *p.* 254 ?

Rhizoma creeping extensively and throwing up culms, many of which are sterile. Culms 12 – 18 inches high, terete, branching at the base. Leaves numerous, 2 – 6 inches long, slightly glaucous ; the upper ones involute above the middle : sheaths closely embracing the culm, smooth ; the upper ones hairy at the throat : ligule almost wanting. Panicle oblong, spikelike, somewhat lobed. Spikelets mostly ovate-oblong, of a yellowish green color ; the flowers all fertile. Glumes very unequal, lanceolate : lower one acute, and keeled ; the upper rather obtuse. Stamens 3 : anthers purple. Style and stigmas elongated. Scales minute, obovate. Caryopsis acuminate.

Salt-marshes ; Long Island, Staten Island, along the East and Hudson rivers : common. *Fl.* August – September. I have followed Kunth, in referring this grass to Poa. It has very much the appearance of the European *P. littoralis.* The plant of the Northwest coast differs in some respects from ours.

33 (a). TRICUSPIS. *Beauv. Agrost. p.* 77. *t.* 15. *f.* 10 ; *Torr. fl.* 1. *p.* 118. *TRICUSPIS*

So named from the three cuspidate points of the lower palea.]

Windsoria, *Nutt.* ; Tridens, *Rœm. & Schult.*

Spikelets nearly terete, many-flowered. Glumes shorter than the flowers. Lower palea tricuspidate by the projecting midrib and margins, with intermediate teeth ; the base and sides villous : upper palea slightly bicuspidate. — Tall perennial grasses, with a large spreading compound purple panicle.

1. TRICUSPIS SESLERIOIDES, *Torr.* (Plate CLVI.) *Tall Red-top.*

Panicle loose, the branches flexuous and widely spreading, smooth; spikelets ovate-lanceolate, 5 – 6-flowered, shining. — *Torr. fl.* 1. *p.* 118; *Beck, bot. p.* 407; *Darlingt. fl. Cest. p.* 73. T. Noveboracensis, *Beauv. Agrost. p.* 77 (no description). Poa flava, *Linn. sp.* 1. *p.* 68? P. seslerioides, *Michx. fl.* 1. *p.* 68; *Muhl. Gram. p.* 149. P. quinquefida, *Pursh, fl.* 1. *p.* 164; *Ell. sk.* 1. *p.* 164. Triodia cuprea, "*Jacq. eclog. gram.* 2. *t.* 21. *f.* 16." Windsoria poæformis, *Nutt. gen.* 1. *p.* 70. Tridens quinquefida, *Roem. & Schult. syst.* 2. *p.* 599. Eragrostis tricuspis, *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 414. Uralepis cuprea, *Kunth*, "*gram.* 1. *t.* 68," *and enum.* 1. *p.* 318.

Culm 3 – 5 feet high, erect, very smooth. Leaves 12 – 18 inches long, smooth, flat, nerved: sheaths bearded at the throat; the lower ones often hairy: ligule very short, bearded. Panicle very large, at first erect, but finally spreading; the branches in pairs or alternate, naked below, hairy in the axils, a little flexuous, and often somewhat nodding. Spikelets alternate, on short pedicels, somewhat appressed to the branchlets. Glumes unequal, scarious, mucronate. Lower palea villous on the back and margins toward the base, with three very strong nerves which are continued beyond the summit, forming cusps, with intermediate teeth; the middle cusp longest; thus the palea appears 5-toothed. Upper palea minutely fringed on the margin. Stamens 3: anthers much exserted. Caryopsis oblong, a little gibbous, hollowed on one side.

Sandy fields, and dry sterile banks: not rare. *Fl.* August. A showy, but poor harsh grass. Pursh states, however, that it is cut for hay in the mountain meadows of Pennsylvania. It is referred to URALEPIS by Kunth, but certainly differs much in habit from the original species of that genus.

34. GLYCERIA. *R. Br. prodr.* 1. *p.* 179; *Kunth, enum.* 1. *p.* 366. *MANNA-GRASS.*

[From the Greek, *glykys*, sweet; the grains being sweet-tasted.]

Spikes many-flowered, mostly terete: rachis jointed. Glumes 2, pointless, nearly equal. Paleæ membranaceo-herbaceous, nearly equal, awnless; the lower usually obtuse, 7-nerved: upper one bicarinate. Stigmas decompound. Caryopsis oblong, free. — Perennial grasses, growing in water or wet places, with creeping rhizomas. Leaves flat; the sheaths commonly entire (or not split on one side): ligule membranaceous.

1. GLYCERIA FLUITANS, *R. Br.* *Common Manna-grass.*

Panicle secund, slightly branched, divaricate; spikelets linear-terete, appressed to the branches, 8 – 12-flowered; flowers very obtuse. — *R. Br. l. c.*; *Torr. fl.* 1. *p.* 103; *Beck, bot. p.* 412; *Darlingt. fl. Cest. p.* 72; *Kunth, enum.* 1. *p.* 367. Festuca fluitans, *Linn. sp.* 1. *p.* 175; *Michx. fl.* 1. *p.* 66; *Pursh, fl.* 1. *p.* 84; *Muhl. gram. p.* 166; *Bigel. fl. Bost. p.* 37. Poa fluitans, *Scopol., Engl. bot. t.* 1520; *Ell. sk.* 1. *p.* 163.

Culm 3 – 5 feet high, compressed, erect or ascending. Leaves 8 – 12 inches long and 2 – 4 lines wide, often floating in the young plant, smoothish : ligule elongated, acute or obtuse. Panicle 8 – 12 inches long, the lower part sometimes concealed in the uppermost sheath ; the branches nearly simple, bearing the spikelets in a racemose manner. Spikelets nearly sessile, about three-fourths of an inch long. Glumes unequal, rounded on the back, without nerves. Paleæ nearly equal in length ; the lower one roughish, scarious on the margin ; the apex eroded : upper palea lanceolate, frequently longer than the lower. Stamens 3 : anthers large, yellow. Styles short : stigmas white. Scales thick, somewhat cordate. Caryopsis oblong, sulcate on the upper side.

Ponds and ditches : common. *Fl.* June. This grass is found in many parts of the world. The grains have a sweetish taste, and are collected largely in Holland, being used as an article of food.

2. GLYCERIA ACUTIFLORA, *Torr.* *Sharp-flowered Manna-grass.*

Panicle simple, elongated, appressed ; spikelets linear-terete, 4 – 12-flowered ; the flowers attenuated and acute, indistinctly nerved ; leaves short, erect. — *Torr. fl.* 1. *p.* 104. Festuca acutiflora, *Bigel. fl. Bost. p.* 37. Festuca brevifolia, *Muhl. gram. p.* 167 ?

Culm about a foot and a half high, a little compressed. Leaves 3 – 6 inches long and 2 lines wide, attenuated at the point, smoothish : ligule elongated. Panicle somewhat nodding, the lower part concealed in the uppermost sheath. Spikelets about 8 lines long ; the flowers distinct. Glumes unequal, nerveless. Lower palea lanceolate, attenuate to a point ; the upper much longer. Stamens 3 : stigmas white. Caryopsis oblong, grooved on the upper side.

Overflowed meadows and wet woods : Island of New-York, Fishkill, &c. *Fl.* June. Very near the preceding species, but easily distinguished by its acute flowers and nerveless paleæ.

3. GLYCERIA AQUATICA, *Smith.* *Reed Manna-grass.*

Panicle equal, diffuse, much branched ; spikelets linear-oblong, 5 – 9-flowered ; flowers free, oblong, obtuse, prominently 7-nerved ; leaves broadly linear. — *Smith, Engl. fl.* 1. *p.* 116 ; *Kunth, enum.* 1. *p.* 367 ; *Hook fl. Bor.-Am.* 2. *p.* 248. G. spectabilis, *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 365. Poa aquatica, *Linn. sp.* 1. *p.* 67. P. aquatica, *β.* Americana, *Torr. fl.* 1. *p.* 108 ; *Beck, bot. p.* 409.

Perennial. Rhizoma creeping. Culm 3 – 5 feet high, stout. Leaves a foot or more in length and often half an inch wide, flat, usually smooth, but sometimes a little rough ; lower part of the sheaths entire : ligule short, obtuse. Panicle 8 – 12 inches long, at first contracted and somewhat nodding, but finally expanding ; the branches flexuous and smoothish, about 4 in a semiwhorl. Spikelets often purple, mostly 6 – 8-flowered. Glumes unequal, ovate, rather obtuse ; the upper one twice as large as the lower. Lower palea obtuse, shorter than the upper one. Stamens 3 : anthers yellow. Stigmas compound.

Wet meadows, northern and western parts of the State : not found on the Hudson below Poughkeepsie. *Fl.* July. This is a very abundant grass in some places. It is good fodder, and might be cultivated in situations where few other grasses would grow. It is a native also of various parts of Europe.

4. GLYCERIA NERVATA, *Trin.* *Nerved Manna-grass.*

Panicle diffuse, loose ; the branches slender and at length pendulous ; spikelets ovate-oblong, about 5 – 6-flowered ; the flowers obtuse, strongly 7-nerved ; ligule ovate. — *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 365 ; *Hook. fl. Bor.-Am.* 2. *p.* 248. G. Michauxii, *Kunth*, "*Gram.* 1. *p.* 343. *t.* 85," *and enum.* 1. *p.* 367. Poa nervata, *Willd. sp.* 1. *p.* 389 ; *Pursh, fl.* 1. *p.* 79 ; *Muhl. gram. p.* 140 ; *Torr. fl.* 1. *p.* 111 ; *Bigel. fl. Bost. p.* 34 ; *Beck, bot. p.* 411 ; *Darlingt. fl. Cest. p.* 76. P. striata, *Michx. fl.* 1. *p.* 69. P. lineata, *Pers. syn.* 1. *p.* 89. P. parviflora, *Pursh, l. c.* Briza Canadensis, *Nutt. gen.* 1. *p.* 69, not of the *suppl.*

Perennial. Culm 3 – 4 feet high. Leaves flat, narrowly linear, smooth : sheaths entire, a little rough : ligule ovate, lacerate. Panicle large and capillary, erect when young ; the branches 2 – 3 together, flexuous, roughish. Spikelets about 2 lines long, often purple. Flowers distinct, caducous. Glumes small, unequal, ovate-lanceolate. Paleæ nearly equal : lower one oblong ; the upper lanceolate-obovate. Stamens 3. Stigmas compound.

Wet meadows and margins of ponds : very common. *Fl.* June.

5. GLYCERIA ELONGATA, *Trin.* *Long-panicled Manna-grass.*

Panicle elongated, racemose, the branches mostly solitary, appressed ; spikelets ovate, obtuse, somewhat tumid, 3 – 4-flowered ; lower palea rather acute ; stamens 2 ; ligule very short. — *Hook. fl. Bor.-Am.* 2. *p.* 248. Poa elongata, *Torr. fl.* 1. *p.* 112 ; *Beck, bot. p.* 411 ; *Darlingt. fl. Cest. p.* 77. P. Torreyana, *Spreng. neue entd.* 2. *p.* 104 ; *Kunth, enum.* 1. *p.* 362.

Perennial. Culm 3 – 4 feet high, simple, erect. Leaves about one foot long and 2 – 3 lines wide, nearly smooth : sheaths entire, smooth : ligule nearly wanting. Panicle 8 – 12 inches long, somewhat nodding ; the branches distant, appressed, flexuous, solitary, or with a smaller one. Spikelets mostly 3-flowered ; the flowers free. Glumes nearly equal, lanceolate, acute, keeled. Paleæ unequal ; the lower one oblong-ovate, somewhat prominently 7-nerved : upper one very obtuse, shorter than the lower. Stamens constantly 2. Stigmas compound.

Swamps and wet meadows : northern and western counties. *Fl.* June – July. A very distinct species ; easily distinguished by its long, contracted, racemose panicle. It occurs also in New England and in Canada.

6. GLYCERIA CANADENSIS, *Trin.* *Rattlesnake-grass.*

Panicle large, effuse, the branches semi-verticillate and finally pendulous; spikelets broadly ovate, tumid, 6 – 8-flowered; lower palea rather acute, 7-nerved; the upper shorter and very obtuse; stamens 2; ligule ovate. — *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 366; *Hook. fl. Bor.-Am.* 2. *p.* 249. Briza Canadensis, *Michx. fl.* 1. *p.* 71; *Pursh, fl.* 1. *p.* 82; *Muhl. gram. p.* 153; *Nutt. gen. suppl.; Bigel. fl. Bost. p.* 36; *Kunth, enum.* 1. *p.* 372. Poa Canadensis, *Beauv. Agrost. p.* 155; *Torr. fl.* 1. *p.* 112. P. aquatica, *Pursh, fl.* 1. *p.* 80.

Perennial. Culm 2 – 3 feet high, erect, terete, leafy. Leaves often longer than the culm, 2 – 3 lines wide, roughish: sheaths entire, a little rough: ligule obtuse, lacerate. Panicle 6 – 8 inches long, at first pyramidal, but the virgate branches at length spreading, and pendulous at the extremity. Spikelets ovate before flowering, but afterwards very broad, about $2\frac{1}{2}$ lines long; the sides convex. Flowers free. Glumes much shorter than the flowers, ovate-lanceolate, acute, unequal; the lower one shorter. Lower palea ovate, distinctly nerved: upper one not ciliate. Stamens always 2. Styles very short: stigmas purple. Caryopsis oblong, brown.

Margin of swamps: rather frequent. *Fl.* July. On account of its large tumid spikes, this species has by many botanists been placed in BRIZA, but it certainly belongs to GLYCERIA, as that genus is now characterized.

35. DACTYLIS. *Linn.; Kunth, enum.* 1. *p.* 385. *ORCHARD-GRASS.*

[From the Greek, *dactylos*, a finger; in allusion to the form of the spike.]

Spikelets 2 – 7-flowered. Glumes unequal; the larger one keeled, mucronate-awned, the point somewhat unilateral. Paleæ herbaceous, mucronate; the lower one 5-nerved, with a fringed keel. Stigmas plumose; the hairs simple or 2-parted, denticulate. — Panicle much contracted, glomerate, secund.

1. DACTYLIS GLOMERATA, *Linn.* *Orchard-grass. Cocksfoot-grass.*

Branches of the panicle naked at the base; spikelets 3 – 4-flowered; leaves keeled. — *Linn. sp.* 1. *p.* 71; *Engl. bot. t.* 335; *Pursh, fl.* 1. *p.* 84; *Muhl. gram. p.* 36; *Ell. sk.* 1. *p.* 155. *t.* 9. *f.* 3; *Torr. fl.* 1. *p.* 125; *Beck, bot. p.* 407; *Darlingt. fl. Cest. p.* 80; *Kunth, enum.* 1. *p.* 386.

Perennial. Culm 2 – 4 feet high. Leaves broadly linear, glaucous: ligule elongated. Panicle thick and compact; the primary branches 3 – 5, solitary. Spikelets in ovate clusters at the extremity of the branches. Glumes very unequal, lanceolate; the upper one strongly ciliate on the keel. Lower palea ovate-lanceolate, rough, ending in a cusp or short awn: upper palea ciliate on the keels. Anthers very large, yellow. Caryopsis oblong, acute at each end.

Fields, orchards, etc. : common. *Fl.* May – June. Introduced from Europe. A valuable grass, but generally thought to be inferior to timothy. It has an advantage over the latter, in ripening at the same time with clover. It also thrives well under the shade of trees.

36. BROMUS. *Linn.; Kunth, enum.* 1. *p.* 412. *BROME-GRASS.*

[From the Greek, *broma*, food. *Bromos* was a name originally applied to a species of wild oat.]

Spikelets usually oblong, 3 – many-flowered ; the flowers distichous. Glumes unequal, shorter than the flowers, mostly keeled. Paleæ herbaceous ; the lower one bifid and usually with an awn below the tip, convex on the back : upper palea bicarinate, fringed on the keels. Stigmas simply plumose ; the hairs elongated, denticulate. — Panicle diffuse or contracted : spikelets pedicellate.

1. BROMUS SECALINUS, *Linn.* (Plate CLVII.) *Cheat. Chess.*

Panicle spreading, at length nodding, the branches nearly simple ; spikelets ovate-oblong, compressed, 8 – 10-flowered ; awns shorter than the paleæ. — *Linn. sp.* 1. *p.* 76 ; *Engl. bot. t.* 1171 ; *Pursh, fl.* 1. *p.* 85 ; *Ell. sk.* 1. *p.* 172 ; *Muhl. gram. p.* 168 ; *Bigel. fl. Bost. p.* 37 ; *Torr. fl.* 1. *p.* 127 ; *Beck, bot. p.* 408 ; *Darlingt. fl. Cest. p.* 69 ; *Kunth, enum.* 1. *p.* 413.

Annual. Culm 2 – 3 feet high ; the nodes pubescent and swollen. Leaves broadly linear, hairy above : sheaths smooth : ligule oblong. Panicle 4 – 6 inches long ; the branches semi-verticillate. Spikelets large and thick, a little remote. Glumes ovate-lanceolate ; the lower one 5-nerved : upper 7-nerved. Lower palea obscurely 7-nerved, pubescent toward the summit. Awns sometimes wanting. Caryopsis large, oblong, grooved above.

Cultivated grounds, particularly among crops of grain. *Fl.* June. There is a very pre valent, but groundless opinion among farmers, that this grass has originated from wheat. To those who are acquainted with the laws of organic life, it is hardly necessary to say that such a transformation has never been proved.

2. BROMUS CILIATUS, *Linn.* *Fringed Brome-grass.*

Panicle loose, nodding ; spikelets at first oblong-lanceolate and terete, finally oblong, 8 – 12-flowered ; the flowers clothed with appressed pubescense, longer than the straight awn. — *Linn. sp.* 1. *p.* 76 ; *Pursh, fl.* 1. *p.* 85 ; *Ell. sk.* 1. *p.* 173 ; *Muhl. gram. p.* 169 ; *Bigel. fl. Bost. p.* 38 ; *Beck, bot. p.* 408 ; *Darlingt. fl. Cest. p.* 70 ; *Kunth, enum.* 1. *p.* 419. B. pubescens, *var.* 1., *Torr. fl.* 1. *p.* 129. B. Canadensis, *Michx. fl.* 1. *p.* 65 ? B. pungens (in part), *Hook, fl. Bor.-Am.* 1. *p.* 252.

Perennial. Culm 3 – 4 feet high, striate ; the nodes black. Leaves broadly linear (3 – 7 lines wide), smoothish underneath, hairy above : lower sheaths retrorsely pubescent ; upper

ones smooth : ligule short, truncate. Panicle 6 – 8 inches long ; the branches 2 – 5 together, filiform, rough. Spikelets from three-fourths of an inch to more than an inch in length, about 10-flowered, at first nearly terete and compact, but after flowering much broader and more open. Glumes lanceolate ; the upper one broader and longer, 3-nerved. Lower palea more or less pubescent, with closely appressed hairs, particularly along the margin, sometimes nearly or quite smooth, 7-nerved : awn straight or slightly tortuous, from one-half to three-fourths the length of the palea : upper palea shorter, linear, strongly ciliate on the margin.

Woods and rocky hills : frequent. *Fl.* June.

3. BROMUS PURGANS, *Linn.* *Hairy-flowered Brome-grass.*

Panicle oblong, somewhat contracted, finally nodding ; spikelets oblong-lanceolate, ovate-oblong when old, 7 – 8-flowered ; the flowers villous, with somewhat spreading hairs ; awn straight, about one-third the length of the paleæ. — *Linn. sp.* 1. *p.* 76 ; *Pursh, fl.* 1. *p.* 85 ; *Muhl. gram. p.* 170 ; *Ell. sk.* 1. *p.* 173 ; *Hook. fl. Bor.-Am.* 2. *p.* 252 (in part).

Perennial. Culm 2 – 3 feet high, pubescent at the nodes. Leaves 3 – 6 lines wide, flat, hairy on both sides, but only sparingly underneath : lower sheaths retrorsely hairy : ligule short and truncate. Panicle about 3 inches long ; the branches short and nearly simple, 2 – 4 together. Spikelets mostly about 8-flowered, three-fourths of an inch long, open and distichous when old. Flowers very hairy, and of a grayish green color. Glumes lanceolate, rather acute, but not mucronate : lower one 5-nerved. Lower palea oblong-lanceolate ; the awn seldom more than one-third the length of the palea, 7-nerved.

Woods and river-banks, northern and western counties. *Fl.* June – July. Resembles the preceding species, but differs in its small rather contracted panicle, very hairy flowers, and shorter awns. Hooker considers *B. pubescens, ciliatus, Canadensis,* and *purgans,* as only one species.

4. BROMUS STERILIS, *Linn.* *Barren Brome-grass.*

Panicle loose, drooping ; the branches elongated and nearly simple ; spikelets linear-lanceolate, oblong when old ; the flowers remote, lanceolate-subulate ; awn straight and slender, longer than the palea ; leaves pubescent ; culm smooth. — *Linn. sp.* 1. *p.* 77 ; *Engl. bot. t.* 1030 ; *Kunth, enum.* 1. *p.* 418.

Annual. Culm 1½ – 2 feet high, slender. Leaves 2 – 3 lines wide, a little pubescent above and on the margin, smooth underneath. Panicle nearly simple, loose and slender ; the branches 2 – 3 together, rough. Spikelets about 6-flowered. Glumes very unequal, lanceolate-subulate, tapering to a sharp point, smooth. Lower palea slender, attenuated upward, rough ; the awn about three-fourths of an inch long. Caryopsis linear, with a deep groove on the upper side.

Penn-Yan, Yates county (*Dr. Sartwell*). This is probably an introduced grass. It is a common species in Europe.

37. KŒLERIA. *Pers. syn.* 1. *p.* 97; *Kunth, enum.* 1. *p.* 380. KŒLERIA.

[In honor of M. KŒLER, a German botanist]

Spikelets 2 – 4-flowered. Glumes shorter than the flowers; the lower one much narrower, keeled. Paleæ membranaceous, unequal; the lower acute or obtuse, unarmed, or with a short awn below the tip; the upper 2-keeled. Styles very short. Cespitose erect grasses, with simple culms, and contracted or spikelike panicles.

1. KŒLERIA ? PENNSYLVANICA, *DC.* *Pennsylvanian Kœleria.*

Panicle long, very slender, rather loose; spikelets mostly 2-flowered; upper glume oblanceolate, obtuse, or slightly pointed; lower palea rough; lower leaves and sheaths softly pubescent. — *DC. cat. hort. Monsp.* (1813), *p.* 117; *Torr. fl.* 1. *p.* 116; *Beck, bot. p.* 407; *Darlingt. fl. Cest. p.* 65. Aira mollis, *Muhl. gram. p.* 83. A. triflora, *Ell. sk.* 1. *p.* 154? Reboulea gracilis (in part), *Kunth, enum.* 1. *p.* 369. Graphephorum Elliotii, *Kunth, l. c. p.* 250 ?

var. *major:* taller; leaves broadly linear, and with the sheaths smooth; panicle more dense. K. truncata, β. major, *Torr. l. c.*

Perennial. Culm about 2 feet high, slender, simple. Leaves short, flat, about 1½ line wide, pale green; the lower ones and the sheaths usually clothed with a minute velvety pubescence: ligule short and lacerate. Panicle 3 – 6 inches long, very slender; the branches 2 - 3 together, distant, rather loose. Spikelets somewhat racemose, sometimes 3-flowered, yellowish green. Lower glume almost linear; the other broader, dilated upward, but scarcely obtuse: both of them hispidulous on the back. Lower palea somewhat coriaceous, roughened with minute crowded dots. Stamens 3: anthers (and also the stigmas) purple. Caryopsis linear, compressed.

Moist woods and meadows: frequent. *Fl.* June.

2. KŒLERIA TRUNCATA, *Torr.* (Plate CL.) *Truncated Kœleria.*

Panicle oblong, contracted; the branches short and erect, racemose; spikelets somewhat clustered, 2-flowered; upper glume broadly obovate, very obtuse or truncate; upper palea smoothish; leaves and sheaths smooth or pubescent. — *Torr. fl.* 1. *p.* 116; *Beck, bot. p.* 408; *Darlingt. fl. Cest. p.* 66. Holcus striatus, *Linn. sp.* 2. *p.* 1486. Aira truncata, *Muhl. gram. p.* 83; *Bigel. fl. Bost. p.* 31. A. obtusata, *Mich. fl.* 1. *p.* 62? Reboulea gracilis, *Kunth, enum.* 1. *p.* 369 (in part).

Perennial. Culm about 2 feet high. Leaves about 1½ line wide, flat. Panicle 3 – 5 inches long, rather dense, very narrow. Spikelets all 2-flowered. Glumes dissimilar: the lower one almost subulate; the other very broad, somewhat coriaceous, scarious on the margin, rough on the keel. Paleæ nearly equal in length, oblong-lanceolate, rather acute, contracted at the base. Caryopsis oblong-linear, nearly the length of the upper palea, light brown.

Dry open woods, and fields. *Fl.* June. This is possibly a mere state of the preceding species, and the *A. truncata* of Michaux may be (as Darlington thinks) not specifically distinct. Kunth regards them all as one plant, and constitutes of them his genus REBOULEA.

38. FESTUCA. *Linn.; Kunth, enum.* 1. *p.* 391. *FESCUE-GRASS.*

[Said to be derived from the Celtic word *fest*, signifying food, or pasturage.]

Spikelets 3 – many-flowered ; the flowers distichous, free. Glumes unequal, mostly keeled. Paleæ herbaceous ; the lower one somewhat rounded on the back, acute, mucronate, or often terminating in an awn. Stigmas simply plumose. Caryopsis compressed, concave on the upper side, adhering to the upper palea. — Panicle usually compound, often racemose.

1. FESTUCA DURIUSCULA, *Linn.* *Hard Fescue-grass.*

Panicle a little contracted, somewhat secund ; spikelets oblong, 5 – 6-flowered, nearly terete, with short awns ; culm-leaves flat, radical ones setaceous. — *Linn. sp.* 1. *p.* 74 ; *Engl. bot. t.* 470 ; *Pursh, fl.* 1. *p.* 82 ; *Muhl. gram. p.* 163 ; *Ell. sk.* 1. *p.* 171 ; *Torr. fl.* 1. *p.* 120 ; *Beck, bot. p.* 405 ; *Kunth, enum.* 1. *p.* 399.

Perennial. Culm 12 – 18 inches high, slender, erect. Leaves smooth ; those of the culm sometimes involute : sheaths soomth : ligule very short. Panicle 2 – 3 inches long, more or less contracted and turned to one side ; the branches usually in pairs. Glumes linear-lanceolate, acute ; the upper one broader. Paleæ lanceolate, nearly equal, smooth ; the upper one terminating in a short straight bristle.

Dry fields : frequent on Long Island. *Fl.* June. Probably introduced from Europe. It sometimes constitutes almost the only grass in extensive sandy fields, but is of little value except for the pasturage of sheep.

2. FESTUCA TENELLA, *Willd.* (Plate CLIV.) *Slender Fescue-grass.*

Panicle spike-form, simple, somewhat secund ; spikelets 7 – 9-flowered ; awns shorter than the subulate flowers ; culm filiform ; leaves setaceous. — *Willd. enum.* 1. *p.* 113 ; *Pursh, fl.* 1. *p.* 83 ; *Ell. sk.* 1. *p.* 168 ; *Muhl. gram. p.* 159 ; *Torr. fl.* 1. *p.* 120 ; *Bigel. fl. Bost. p.* 36 ; *Beck, bot. p.* 405 ; *Darlingt. fl. Cest. p.* 70 ; *Kunth, enum.* 1. *p.* 397. F. bromoides, *Michx. fl.* 1. *p.* 66. F. octoflora, *Walt. fl. Car. p.* 81. Schenodorus tenellus, *Rœm. & Schult. syst.* 2. *p.* 727.

Annual. Culms often clustered, 6 – 12 inches high, erect, geniculate at base, very slender, angular above. Leaves 1 – 3 inches long, erect : sheaths a little pubescent : ligule short, toothed. Panicle 2 – 3 inches long ; the lower branches in pairs, sometimes a little expanding. Spikelets mostly 7-flowered, brownish when old. Glumes unequal, subulate, very acute. Lower palea involute, rough, not keeled ; the summit extended into a short bristle, which is about half or two-thirds the length of the paleæ : upper palea shorter, linear, acuminate. Caryopsis linear, with a groove on the upper side.

Dry sterile soils : frequent. *Fl.* June – July.

3. FESTUCA NUTANS, *Willd.* (Plate CLVIII.) *Nodding Fescue-grass.*

Panicle diffuse, at length nodding; the branches long and slender, mostly in pairs, naked below; spikelets ovate, 3 – 5-flowered; the flowers smooth, awnless, very obscurely nerved. — *Willd. enum.* 1. *p.* 116; *Pursh, fl.* 1. *p.* 84; *Muhl. gram. p.* 165; *Ell. sk.* 1. *p.* 172; *Torr. fl.* 1. *p.* 122; *Beck, bot. p.* 406; *Darlingt. fl. Cest. p.* 72; *Kunth, enum.* 1. *p.* 407.

Perennial. Culms, 2 – 3 feet high, erect, simple, terete. Leaves 2 – 3 lines wide, dark green, nearly smooth, or sometimes a little hairy: ligule short. Panicle slender; the branches nearly simple and rough. Spikelets few, towards the summit of the branches, mostly 3-flowered. Glumes lanceolate, acuminate, remotely serrulate on the keel; the upper one 3-nerved. Paleæ coriaceous, smooth, nearly equal: lower one ovate-lanceolate, acute or rather obtuse, very obscurely 5-nerved, not scarious on the margin; the upper lanceolate, strongly margined. Stamens 3: anthers yellow.

Woods, and rocky shady banks: frequent. *Fl.* June. This species has much the appearance of a POA, and has been referred to that genus by Link, but it rather belongs to FESTUCA.

4. FESTUCA ELATIOR, *Linn.* *Tall Fescue-grass.*

Panicle much branched, loose and rather spreading: spikelets ovate-lanceolate, 4 – 6-flowered; the flowers cylindrical, mucronate or acuminate; rhizoma creeping. — *Linn. sp.* 1. *p.* 75; *Engl. bot. t.* 1593; *Pursh, fl.* 1. *p.* 83; *Muhl. gram. p.* 164; *Bigel. fl. Bost. p.* 36; *Torr. fl.* 1. *p.* 121; *Beck, bot. p.* 406; *Darlingt. fl. Cest. p.* 71; *Kunth, enum.* 1. *p.* 404.

Perennial. Culm 3 – 5 feet high. Leaves broadly linear, about a foot long: sheaths smooth, loose: ligule very short. Panicle 6 – 8 inches long, usually nodding; the branches mostly in pairs, rough. Spikelets somewhat racemose on the branches. Glumes unequal: lower one linear-lanceolate; upper obscurely 3-nerved. Lower palea lanceolate, acute or mucronate: upper palea linear. Caryopsis oblong-oval.

Low meadows and pastures: frequent. *Fl.* June. This grass is probably a foreigner, but is now extensively naturalized in the United States. It is worth but little, either for hay or pasture.

5. FESTUCA PRATENSIS, *Huds.* *Meadow Fescue-grass.*

Panicle spreading, moderately branched, erect; spikelets linear, 5 – 10-flowered; flowers cylindrical, awnless; lower palea rather acute, not mucronate; leaves linear; root fibrous. — *Huds. fl. Angl. p.* 37; *Engl. bot. t.* 1592; *Torr. fl.* 1. *p.* 121; *Beck, bot. p.* 406; *Darlingt. fl. Cest. p.* 71; *Kunth, enum.* 1. *p.* 404.

Perennial. Culm 2 – 3 feet high. Leaves about 6 inches long, broadly linear, and with the sheaths smooth: ligule very short or almost wanting. Panicle 4 – 6 inches long, a little

secund; the branches solitary or in pairs. Spikelets mostly 7-flowered, racemose toward the extremity of the branches. Glumes unequal; the upper larger, and scarious on the margin. Lower palea slightly 5-nerved.

Meadows and fields. *Fl.* June. A naturalized grass, of European origin; now quite common in the Northern and Middle States. It is considered a much more valuable species than the preceding.

38 (a). DIPLACHNE.* *Beauv. Agrost. p.* 80. *t.* 16. *f.* 9. *DIPLACHNE.*

[From the Greek, *diploos*, double, and *achne*, chaff; the outer palea being somewhat divided at the extremity.]

Spikelets at first terete, 7 – 9-flowered. Paleæ unequal, mucronate, villous on the margins: lower one slightly bifid at the tip, with a straight bristle between the teeth, 3-nerved; the upper bifid, flat on the back. Stamens 3: anthers small. Stigmas simply plumose. Pericarp loose! Seed not sulcate. — Panicle somewhat secund; the branches spikelike, expanding.

1. DIPLACHNE FASCICULARIS, *Beauv.* *Cluster-flowered Diplachne.*

Beauv. l. c. Festuca fascicularis, *Lam. ill.* 1. *p.* 189; *Torr. fl.* 1. *p.* 122; *Beck, bot. p.* 406. F. multiflora, *Walt. fl. Car. p.* 81? F. polystachya, *Michx. fl.* 1. *p.* 66; *Pursh, fl.* 1. *p.* 83; *Ell. sk.* 1. *p.* 169. *t.* 10. *f.* 3. F. procumbens, *Muhl. gram. p.* 160. Leptochloa polystachya, *Kunth, enum.* 1. *p.* 271.

Annual. Culm 8 – 15 inches long, much branched from the base, and procumbent; the branches geniculate. Leaves much longer than the culm, narrow, tapering to a long slender point: sheaths long and loose, compressed, smooth: ligule lacerate. Panicle erect; the branches composed of many simple spiked racemes. Spikelets secund, on short pedicels, about 5 lines long. Glumes lanceolate, acuminate, one-nerved, roughish on the keel; the upper one much longer. Lower palea ovate-lanceolate, strongly 3-nerved; the middle nerve produced beyond the point into a bristle, which is two-thirds the length of the palea: upper palea much shorter. Styles very short. Pericarp membranaceous, loosely investing the oblong seed.

Brackish meadows and sandy soils near the salt water. Seacoast of Long Island, and in the neighborhood of New-York. *Fl.* August. After a careful re-examination of this grass, I am convinced that it is not a true FESTUCA, and that the genus DIPLACHNE of Beauvois, of which it is the type, should be restored.

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* Omitted in the Conspectus.

39. UNIOLA. *Linn.; Kunth, enum.* 1. *p.* 424. *SPIKE-GRASS.*

[Probably so named, because the lower flowers of the spikelets consist of a single palea.]

Spikelets compressed, ancipital, many-flowered; one or more of the lower flowers sterile, and consisting of a single palea. Glumes keeled. Paleæ of the perfect flowers 2, membranaceo-coriaceous; the lower one boat-shaped; the upper smaller, doubly-keeled. Stamens 1 – 3. Stigmas simply plumose, elongated. Caryopsis smooth. — Erect perennial grasses. Spikelets panicled.

1. UNIOLA GRACILIS, *Michx.* *Slender Spike-grass.*

Panicle elongated, racemose; spikelets 3 – 4-flowered; the flowers spreading, monandrous. — *Michx. fl.* 1. *p.* 71; *Pursh, fl.* 1. *p.* 82; *Ell. sk.* 1. *p.* 168; *Muhl. gram. p.* 157; *Torr. fl.* 1. *p.* 105; *Beck, bot. p.* 412; *Trin. in act. Petrop.* 6 *ser.* 1. *p.* 360; *Kunth,* "*gram.* 1. *p.* 321. *t.* 72," ex *enum.* 1. *p.* 425. Holcus laxus, *Linn. sp.* 2. *p.* 1048; *Willd. sp.* 4. *p.* 934.

Rhizoma creeping. Culms cespitose, 3 – 4 feet high, slender, a little compressed, leafy. Leaves a foot or more long, 2 – 3 lines wide, attenuated to a fine point, flat, smooth: sheaths hairy at the throat: ligule very short, ciliate. Panicle 6 – 10 inches long, very slender, with solitary remote appressed branches. Spikelets acute at the base, 2 – 3 at the extremity of each branch; the flowers spreading. Glumes acute, rigid. Lower palea ovate, with a long acumination, ciliolate on the margin; the upper shorter. Stamen solitary: anthers dark purple. Styles elongated: stigmas purple. Caryopsis rugose, dark brown.

Borders of sandy swamps near the salt water; Long Island. *Fl.* August.

TRIBE X.* *HORDEACEÆ. Kunth.*

Spikelets 3 – *many-flowered* (*rarely one-flowered*), *often awned; the terminal flower imperfect. Glumes and paleæ* 2, *herbaceous; the former rarely wanting. Stigmas sessile. Ovary often hairy. — Inflorescence in a simple solitary spike; the rachis rarely jointed.*

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* The following Tribes and Genera were omitted in the Conspectus (page 415).

Tribe 10. HORDEACEÆ. Spikelets sessile on a rachis, many-flowered; upper flower imperfect.

40. LOLIUM. Spikelets many-flowered, distichous, solitary, contrary to the rachis. Inner glume wanting.

41. TRITICUM. Spikelets solitary, many-flowered. Glumes 2, opposite.

42. ELYMUS. Spikelets 2 – 4 together, 2 – 7-flowered. Glumes both on one side of the spikelet; sometimes rudimentary.

Tribe 11. ANDROPOGONEÆ. Spikelets in pairs, one-flowered; the lower one incomplete, on a bearded pedicel. Paleæ mostly hyaline. — Habit various.

43. ANDROPOGON. Lower flower staminate or neuter; the glumes and paleæ often wanting. Upper flower perfect. Glumes awnless. Lower palea awned. — Flowers panicled or in spikes.

40. LOLIUM. *Linn.; Kunth, enum.* 1. *p.* 435. *DARNEL.*

[An ancient Latin name, applied to this genus.]

Spikelets sessile, many-flowered, distichous, contrary to the rachis. Flowers naked at the base. Inner glume mostly wanting. Lower palea lanceolate, mucronate, or with a short awn at the tip; upper one bicarinate. — Spike simple: rachis not articulated.

1. LOLIUM PERENNE, *Linn.* *Ray-grass. Common Darnel.*

Perennial; flowers longer than the glumes, mucronate, or with short awns. — *Linn. sp.* 1. *p.* 83; *Muhl. gram. p.* 196; *Bigel. fl. Bost. p.* 45; *Torr. fl.* 1. *p.* 133; *Beck, bot. p.* 416; *Darlingt. fl. Cest. p.* 87; *Kunth, enum.* 1. *p.* 436.

Culm 1 – 2 feet high, terete. Leaves broadly linear, smooth and shining: ligule truncate. Spike about 6 inches long; the rachis flexuous. Spikelets ovate, 12 – 18, alternately arranged on two opposite sides of the rachis, somewhat distant, 7 – 9-flowered. Glume solitary (except in the terminal spikelet, which has two), situated externally, linear-lanceolate. Lower palea lanceolate-oblong, rather obtuse, 5-nerved: upper one longer, ciliolate on the keels.

Meadows and pastures: somewhat rare. *Fl.* June. Doubtless of European origin; now pretty widely diffused in the northern and middle States. It is not cultivated, but in some places constitutes a considerable portion of the meadow-grass.

41. TRITICUM. *Linn.; Kunth, enum.* 1. *p.* 438. *WHEAT.*

[From the Latin, *tritum*; because it is beaten or ground for food.]

Spikelets solitary at the joints of the rachis. Glumes 2, opposite and transverse, nearly equal. Paleæ lanceolate; the lower one acuminate or awned at the summit. — Annual or perennial grasses. Glumes ovate-oblong and somewhat ventricose (TRITICUM proper), or lanceolate (AGROPYRON).

1. TRITICUM REPENS, *Linn.* *Couch-grass. Quitch-grass.*

Spike distichous, compressed; spikelets about 5-flowered; glumes lanceolate, 5-nerved, acuminate; lower palea with or without an awn; rhizoma creeping. — *Linn. sp.* 1. *p.* 86; *Engl. bot. t.* 909; *Muhl. gram. p.* 195; *Bigel. fl. Bost. p.* 45; *Beck, bot. p.* 416; *Darlingt. fl. Cest. p.* 86; *Kunth, enum.* 1. *p.* 440; *Hook. fl. Bor.-Am.* 2. *p.* 254. Agropyron repens, *Beauv. Agrost. p.* 102; *Torr. fl.* 1. *p.* 135.

Root or rhizoma creeping extensively, and penetrating deeply into the earth. Culm 1 – 2 feet high. Leaves sometimes a little glaucous, smooth or somewhat hairy: sheaths usually smooth: ligule short and truncate. Spike 3 – 5 inches long; the rachis flexuous, jointed and compressed. Glumes nearly equal, keeled, strongly nerved. Flowers rather distant. Lower palea 5-nerved, oblong, mucronate, or with a short bristle at the tip: upper palea shorter, ciliate on the keels.

Fields and cultivated grounds : common. *Fl.* June – August. The common variety here described, is probably an introduced plant ; but there are other forms of this grass, found in Canada and the Northwestern States, that seem to be indigenous.

2. TRITICUM CANINUM, *Linn.* *Fibrous-rooted Wheat-grass.*

Spike distichous ; spikelets about 5-flowered ; glumes lanceolate, 3 – 5-nerved, acute ; lower palea awned ; root fibrous. — *Linn. sp.* 1. *p.* 86 ; *Engl. bot. t.* 1372 ; *Muhl. gram. p.* 196 ; *Kunth, enum.* 1. *p.* 442. Agropyrom caninum, *Roem. & Schult. syst.* 2. *p.* 756 ; *Torr. fl.* 1. *p.* 136.

Near Penn-Yan (*Dr. Sartwell*). I have seen no specimen of the plant from this State. There can scarcely be a doubt of its being an introduced species. It is best distinguished from the preceding, by its fibrous root.

42. ELYMUS. *Linn. ; Kunth, enum.* 1. *p.* 449. *LYME-GRASS.*

[*Elymas* was a name given by the Greeks to certain species of PANICUM, because growing abundantly about Elyma : afterwards it was applied to the present genus.]

ASPRELLA, *Cavan.* ; GYMNOSTACHUM, *Schreb.*

Spikelets 2 – 4 at each joint of the rachis, 2 – 7-flowered, the upper flower imperfect. Glumes 2, both of them situated on one side of the spikelet (sometimes nearly wanting or rudimentary). Paleæ 2 ; the lower one usually awned. — Perennial (or sometimes annual) grasses, nearly allied to HORDEUM.

1. ELYMUS VIRGINICUS, *Linn.* *Virginian Lyme-grass. Wild Rye.*

Spike erect, dense ; spikelets in pairs, 2 – 3-flowered, the flowers nearly smooth ; glumes lanceolate, strongly nerved, as long as the spikelet. — *Linn. sp.* 1. *p.* 83 ; *Michx. fl.* 1. *p.* 65 ; *Pursh, fl.* 1. *p.* 89 ; *Ell. sk.* 1. *p.* 180. *t.* 12. *f.* 2 ; *Muhl. gram. p.* 176 ; *Bigel. fl. Bost. p.* 46 ; *Torr. fl.* 1. *p.* 137 ; *Beck. bot. p.* 415 ; *Darlingt. fl. Cest. p.* 83.

Perennial. Culm 2 – 4 feet high, terete, erect. Leaves broadly linear, bright green, rough ; sheaths smooth or pubescent : ligule very short. Spike rigidly erect, thick. Glumes collateral, thickened and somewhat cartilaginous, about 5-nerved externally, rough, tapering at the summit to a short bristle. Lower palea oblong-lanceolate, obscurely nerved, abruptly ending in a slender bristle which is usually longer than the valve. Stamens 3. Ovary densely bearded at the summit.

Banks of rivers : frequent along the lower part of the Hudson. *Fl.* July – August. Easily distinguished from all the following species, by its rigid spike and broad thick glumes.

2. ELYMUS CANADENSIS, *Linn.* *Canadian Lyme-grass. Wild Rye.*

Spike rather loose, and nodding at the extremity; spikelets in pairs, 3 – 5-flowered; flowers hairy; glumes lanceolate-subulate, awned, prominently nerved. — *Linn. sp.* 1. *p.* 83; *Pursh, fl.* 1. *p.* 89; *Muhl. gram. p.* 178; *Torr. fl.* 1. *p.* 137; *Beck, bot. p.* 415; *Darlingt. fl. Cest. p.* 83; *Kunth, enum.* 1. *p.* 451. E. glaucifolius, *Willd. enum.* 1. *p.* 131; *Pursh, l. c.; Muhl. l. c.*; *Kunth, l. c.* E. Canadensis, *β.* glaucifolius, *Torr. l. c.*

Rhizoma creeping. Culm 3 – 4 feet high. Leaves broadly linear, flat, often more or less glaucous: sheaths smooth: ligule short. Spike 6 – 8 inches long, commonly a little nodding at the extremity: spikelets loose and somewhat spreading, the lower ones often three together, usually with 3 perfect flowers and one or two abortive ones. Glumes scarcely one line wide, tapering to a long slender awn or bristle, marked with 3 or 4 strong nerves on the outside. Lower palea oblong-lanceolate, rough with short hairs, terminating in a slender rough awn which is longer than the palea: upper palea obtuse, ciliolate on the margins. Caryopsis linear-oblong, bearded at the summit.

Banks of rivers: frequent. *Fl.* August.

3. ELYMUS VILLOSUS, *Muhl.* *Slender Hairy Lyme-grass.*

Spike somewhat nodding, loose; rachis and flowers hispidly hairy; spikelets mostly in pairs, 1 – 3-flowered; glumes narrowly linear, hairy-ciliate, 2 – 3-nerved; culm slender; sheaths pubescent. — *Muhl. in Willd. enum. p.* 131, *and gram. p.* 175; *Pursh, fl.* 1. *p.* 89; *Torr. fl.* 1. *p.* 138; *Beck, bot. p.* 415; *Darlingt. fl. Cest. p.* 84; *Kunth, enum.* 1. *p.* 451. E. striatus, *Muhl. l. c. ?*; *Bigel. fl. Bost. p.* 46?; *Kunth. l. c. ?*

Perennial. Culm 2 – 3 feet high, erect, terete. Leaves about 3 lines wide, somewhat pubescent above: lower sheaths hairy; the upper ones often smooth. Spike about 3 inches long, at first erect, but at length a little nodding, slender and open. Glumes very narrow, ciliate with rigid hairs; the awn at the tip almost capillary. Lower palea conspicuously hispid; the slender awn about an inch long.

Banks of rivers, and rocky hill-sides: not common. *Fl.* July. This is the most slender of all our species. The spikes strongly resemble small heads of rye.

4. ELYMUS HYSTRIX, *Linn.* *Bottle-brush Grass.*

Spike erect; spikelets in pairs or ternate, distant, spreading, about 3-flowered; flowers awned; glumes minute and subulate or wanting. — *Linn. sp.* (ed. 2.) 1. *p.* 124; *Ell. sk.* 1. *p.* 181; *Muhl. gram. p.* 178; *Torr. fl.* 1. *p.* 138; *Bigel. fl. Bost. p.* 46; *Beck, bot. p.* 415; *Darlingt. fl. Cest. p.* 84. Asprella Hystrix, *Willd. enum. p.* 132; *Kunth, enum.* 1. *p.* 454; *Hook. fl. Bor.-Am.* 2. *p.* 256. A. angustifolia, *Nutt. in trans. Amer. phil. soc. n. ser.* 5. *p.* 151. Gymnostachum Hystrix, *Schreb. gram. t.* 47.

Root perennial, fibrous Culm 2 – 4 feet high, erect. Leaves broadly linear, flat, often glaucous. Spike 4 – 6 inches long. Spikelets 2 – 3 at each joint of the compressed naked rachis, at first somewhat erect, but at length spreading almost horizontally, usually 3- (rarely 5-) flowered. Glumes commonly wanting, but often with 2 callosities in their place. Sometimes, particularly in the upper part of the spike, there are distinct subulate glumes, a pair at the base of each spikelet. Lower glume obscurely nerved, smoothish; the summit furnished with a long slender bristle.

Moist, rocky woods, and along shady ravines: not rare. *Fl.* July. This grass, which several distinguished botanists have separated as a distinct genus, is undoubtedly a true ELYMUS, the glumes being often more or less developed. In the advanced state, the spike has much the appearance of a *bottle-brush.*

TRIBE XI. *ANDROPOGONEÆ. Kunth.*

Spikelets in pairs, one-flowered; the lower one incomplete, on a bearded pedicel. Paleæ mostly hyaline. — Habit various.

43. ANDROPOGON. *Linn.*; *Kunth, enum.* 1. *p.* 485. BEARD-GRASS.

[From the Greek, *aner*, a man, and *pogon*, a beard; in allusion to the hairy flowers.]

Lower flower staminate or neuter; the glumes and paleæ often wanting. Upper flower perfect. Glumes awnless. Lower palea awned. — Flowers in panicles or spikes.

* *Inflorescence panicled.*

1. ANDROPOGON NUTANS, *Linn.* *Wood-grass. Indian-grass.*

Panicle terminal, oblong, branched, at length nodding; lower flower reduced to a mere pedicel, without valves; outer glume of the perfect flower clothed with brownish hairs; awn contorted. — *Linn. sp.* 1. *p.* 1045; *Pursh, fl.* 1. *p.* 74; *Muhl. gram. p.* 284; *Ell. sk.* 1. *p.* 146; *Bigel. fl. Bost. p.* 43; *Torr. fl.* 1. *p.* 157; *Beck, bot. p.* 418; *Darlingt. fl. Cest. p.* 88; *Kunth, enum.* 1. *p.* 604. A. avenaceus, *Michx. fl.* 1. *p.* 58; *Willd. sp.* 4. *p.* 907; *Pursh, l. c.*; *Kunth, l. c.* excl. syn. *Ell.*

Perennial. Culm 3 – 6 feet high, erect, simple, terete. Leaves a foot or more in length and 4 – 6 lines wide, glaucous: sheaths smooth: ligule elongated, membranaceous. Panicle at first erect, nodding when mature, 6 – 10 inches long, often loose; the primary branches smooth: ultimate branches villous. Perfect spikelet sessile; the glumes equal, lanceolate, brownish and shining, coriaceous: lower one very hairy; the upper (or inner) smooth. Paleæ shorter than the glumes, very thin and membranaceous: lower one with a long twisted and bent awn; the upper ciliate on the margin. Stamens 3: anthers yellow.

Sandy and sterile fields: frequent. *Fl.* August – September.

** *Inflorescence spiked; the spikes simple, in pairs, or fascicled.*

2. ANDROPOGON SCOPARIUS, *Michx.* *Purple Wood-grass.*

Spikes simple, lateral and terminal, pedunculate; lower flower neuter, awned; glumes of the perfect flower smooth; the awn twisted. — *Michx. fl.* 1. *p.* 57; *Pursh, fl.* 1. *p.* 74; *Ell. sk.* 1. *p.* 146; *Torr. fl.* 1. *p.* 156; *Beck, bot. p.* 417; *Darlingt. fl. Cest. p.* 89; *Kunth, enum.* 1. *p.* 490. A. purpurascens, *Willd. sp.* 4. *p.* 913; *Muhl. gram. p.* 282; *Bigel. fl. Bost. p.* 43. Pollinia scoparia, *Spreng.; Roem. & Schult. syst.* 2. *p.* 832.

Perennial. Culm 3 – 4 feet high, paniculately branched, a little compressed; the branches somewhat fasciculate, long and slender. Leaves flat, a little hairy, sometimes glaucous: lower sheaths hairy. Spikes terminating the branches, 1 – 2 inches long, often purple; the rachis flexuous, compressed, hairy on the margins. Pairs of spikelets alternate and distichous, rather distant. Lower or neuter flower small, on a very villous pedicel. Glumes unequal; the lower one awned: upper one often wanting. Paleæ inconspicuous or wanting. Glumes of the perfect flower lanceolate. Awn 3 – 4 times as long as the flowers. Stamens 3.

Dry barren soils: common. *Fl.* August. It is often called *Broom-grass.*

3. ANDROPOGON FURCATUS, *Muhl.* *Finger-spiked Wood-grass.*

Spikes digitate, generally by threes or fours; lower flower staminate, awnless; awn of the perfect flower contorted. — *Muhl. in Willd. sp.* 4. *p.* 919, *and gram. p.* 281; *Schreb. Gram. t.* 42; *Pursh, fl.* 1. *p.* 75; *Ell. sk.* 1. *p.* 150; *Torr. fl.* 1. *p.* 157; *Bigel. fl. Bost. p.* 43; *Beck, bot. p.* 418; *Darlingt. fl. Cest. p.* 89; *Kunth, enum.* 1. *p.* 492.

Perennial. Culm about 4 feet high, simple or somewhat branching. Leaves flat, nearly smooth; the lower ones very long: sheaths smooth. Spikes 2 – 3 inches long, 3 – 5 or more at the summit of the culm; the lateral ones often in pairs, straight and somewhat rigid; the rachis thick and straight. Staminate flower on a short thick pedicel, about half as long as the glumes, which are lanceolate, pale, roughish pubescent, and nearly as long as in the perfect flower. Paleæ lanceolate, shorter than the glumes: awn of the lower one three times as long as the flower: upper palea minute. Stamens 3. Caryopsis oblong, brown.

Rocky banks and hill-sides: not rare. *Fl.* August – September.

4. ANDROPOGON VIRGINICUS, *Linn.* *Virginian Beard-grass.*

Culm somewhat compressed; sheaths smooth; spikes short, 2 – 3 together, in slender somewhat remote appressed fascicles, lateral and terminal; lower flower reduced to a mere pedicel without glumes; perfect flower monandrous; awn straight. — *Linn. sp.* 2. *p.* 1046; *Pursh, fl.* 1. *p.* 75; *Muhl. gram. p.* 277; *Torr. fl.* 1. *p.* 156; *Beck, bot. p.* 418; *Darlingt. fl. Cest. p.* 89; *Kunth, enum.* 1. *p.* 495. A. dissitiflorum, *Michx. fl.* 1. *p.* 55; *Ell. sk.* 1. *p.* 149; *Pursh, l. c.; Kunth, l. c.* A. vaginatus, *Ell. sk.* 1. *p.* 148? Anantherum Virginicum, *Spreng.*

Perennial. Culm about 3 feet high, compressed below, with remote short branches above Leaves a foot or more in length; the lowest ones hairy on the margin and upper surface. Fascicles of spikes partly concealed in compressed acuminate bract-like sheaths: rachis filiform, clothed with long silky hairs. Lower flower a mere awn-like plumose pedicel, longer than the perfect one. Glumes of the perfect flower linear-lanceolate, equal. Awn of the lower palea very slender, more than half an inch in length. Anther linear, yellow. Caryopsis oblong.

Sterile soils and exsiccated swamps: common. *Fl.* September.

5. ANDROPOGON MACRORUS, *Michx.* *Cluster-flowered Beard-grass.*

Spikes in pairs; the peduncles in dense fastigiate panicles, lateral and terminal; lower flower a mere rudiment, without valves; perfect flower monandrous, the awn straight. — *Michx. fl.* 1. *p.* 75; *Muhl. gram. p.* 278; *Ell. sk.* 1. *p.* 150; *Torr. fl.* 1. *p.* 156; *Beck, bot. p.* 418; *Darlingt. fl. Cest. p.* 88; *Kunth, enum.* 1. *p.* 495. Cinna glomerata, *Walt. fl. Car. p.* 59.

Perennial. Culm about 3 feet high, much branched towards the top; the nodes smooth. Leaves roughish: lower ones long; the upper short and lanceolate: sheaths loose; the upper ones often hairy. Spikes about an inch long, very numerous, forming dense leafy clusters, and partly concealed in the compressed boat-like sheaths. Rachis clothed with long white hairs. Flowers similar to those of the preceding species.

Low grounds and swamps, particularly near the salt water: not found in the interior of the State. *Fl.* September. Very nearly allied to the preceding species; differing, chiefly, in the very dense fastigiate clusters of spikes.

Division II. FLOWERLESS or CRYPTOGAMOUS PLANTS.

Plants destitute of proper flowers; producing (sometimes by two kinds of organs) reproductive organs called *spores*, which differ from seeds in having neither integuments nor embryo.

Order CXXVI. EQUISETACEÆ. *DC.* The Horsetail Tribe.

Fructification in terminal cones or spikes, composed of peltate scales, which are attached to a central axis, and bear on their inner surface several involucres or thecæ which contain the spores. The spores are attached to 4 club-shaped elastic filaments (*elaters*) which roll up when moist, and uncoil themselves when dry. — Leafless herbaceous perennial plants, with creeping rhizomas. Stems hollow and jointed, striate, either simple or with whorled branches, and furnished at the nodes with toothed sheaths, which may be regarded as united whorls of leaves. The epidermis contains a large quantity of silex, which is deposited in a singular and beautiful manner. The intervals between the striæ are perforated with stomata.

1. EQUISETUM. *Linn.; Endl. gen. no.* 601. *HORSETAIL.*

[From the Latin, *equus*, a horse, and *seta*, a hair or bristle; some of the species resembling a horsetail.]

Character the same as that of the Order.

An excellent account of the North American species of this genus, by Prof. Braun, with additions by Dr. Englemann, is given in Silliman's Journal, Vol. 46.

* *Fertile stems unbranched, discolored, appearing before the sterile ones.*

1. Equisetum arvense, *Linn.* *Field Horsetail.*

Sterile. Stems erect or assurgent, roughish, with 12 – 14 furrows, the branches 3 – 4-angled and ascending; teeth of the sheath lanceolate-subulate; fertile stems simple, erect; the sheaths large, loose, remote. — *Linn. sp.* 2. *p.* 1061; *Engl. bot. t.* 1874; *Pursh, fl.* 2. *p.* 651; *Bigel. fl. Bost. p.* 383; *Torr. compend. p.* 389; *Beck, bot. p.* 446; *Darlingt. fl. Cest. p.* 573; *Braun & Engl. l. c. p.* 83.

Rhizoma creeping extensively. Sterile stems 10 – 15 inches high, attenuated upward, with numerous slender whorled branches, which are either simple or somewhat divided, bright green : all the joints sheathed. Stomata irregularly disposed over the surface of the grooves, between the ridges. Fertile stems appearing before the sterile ones, easily breaking at the joints : sheaths dark brownish or purple. Heads or spikes oblong, obtuse ; the scales at first closely approximated and of an elongated hexahedral form, more open when mature. Spores (as in the rest of the species) singularly hygrometric, the filaments instantly coiling up if breathed upon when they are dry.

Moist banks and low grounds : frequent. *Fr.* April. Our plant is altogether like the European *E. arvense.* Towards the passes of the Rocky mountains, this species is abundant, and constitutes a favorite and nutritious article of food for horses.

** *Fertile stems at length branched, bearing the fructification at the same time with the branches.*

2. EQUISETUM SYLVATICUM, *Linn.* *Wood Horsetail.*

Sterile and fertile stems both branched, about 12-furrowed ; the branches compound, and curved downward ; sheaths loose, deeply cleft into several broadly lanceolate teeth. — *Linn. sp.* 2. *p.* 1061 ; *Pursh, fl.* 2. *p.* 651 ; *Bigel. fl. Bost. p.* 384 ; *Torr. compend. p.* 390 ; *Beck, bot. p.* 446 ; *Darlingt. fl. Cest. p.* 574 ; *Braun & Engl. l. c. p.* 84.

Fertile stems 8 – 12 inches high ; the sterile ones taller : branches slender, chiefly from the uppermost joints in the fertile stems ; all of them gracefully recurved. Stomata irregularly disposed in the epidermis of the grooves. Sterile plants of an elongated conical form. Spikes oblong.

Low grounds and moist woods : not common. *Fl.* May. Our plant is exactly like my European specimens.

3. EQUISETUM LIMOSUM, *Linn.* *Smooth Swamp Horsetail. Pipes.*

Stem smooth, with from 16 – 21 striæ (sometimes simple) ; the branches nearly erect, simple ; teeth of the sheaths subulate, rigid, distinct, short. — *Linn. sp.* 2. *p.* 1062 ; *Engl. bot. t.* 929 ; *Torr. compend. p.* 390 ; *Beck, bot. p.* 446 ; *Braun & Engl. l. c. p.* 86. E. uliginosum, *Muhl. cat. p.* 103? ; *Bigel. fl. Bost. p.* 383 ; *Pursh, fl.* 2. *p.* 651.

Stems 2 – 3 feet high, erect ; the branches usually simple and short, mostly arising from the middle joints, sometimes very short or wanting. Stomata scattered over the intervals of the striæ. Sheaths appressed, numerous, with 15 – 20 acute narrow teeth, which are blackish or bordered with dark brown. Spike oblong, about three-fourths of an inch in length.

Borders of ponds and rivers, usually growing in the water ; sometimes in great quantities. *Fl.* June. A common European species.

**** Stems simple, or irregularly branched from the root.*

4. EQUISETUM HYEMALE, *Linn.* *Scouring Rush. Shave-grass.*

Stems numerous, simple, naked, erect, very rough ; sheaths short, blackish at the base and top, with about 14 – 20 very small finally deciduous teeth. — *Linn. sp.* 2. *p.* 1062 ; *Engl. bot. t.* 915 ; *Pursh, fl.* 2. *p.* 652 ; *Bigel. fl. Bost. p.* 382 ; *Torr. compend. p.* 389 ; *Beck, bot. p.* 446 ; *Darlingt. fl. Cest. p.* 574 ; *Braun & Engl. l. c. p.* 89.

Stems 15 inches – 3 feet high, persistent through the winter, terete, from one-fourth to one-third of an inch in diameter ; the ridges roughened with minute concretions of silica, of a pale somewhat glaucous green. Stomata disposed in 2 distinct ranges. Sheaths 3 – 4 lines long, with a broadish dark colored band at the base, and usually a narrower one at the upper margin ; when young, furnished with minute blackish awned teeth, which fall off early, leaving the sheath truncate, and crenulate or entire. Spike ovate, with black scales.

Swamps and wet banks : frequent. *Fl.* May – June. The epidermis of this species abounds more in silex than any of the others, so that the stems are often employed for scouring wood and metals.

5. EQUISETUM VARIEGATUM, *Schleich.* *Variegated Rough Horsetail.*

Stems several, usually decumbent or assurgent, simple or only branching at the base, with 4 – 8 striæ ; rough sheaths with membranaceous lanceolate teeth, blackish at the base. — *Engl. bot. t.* 1987 ; *Hook. fl. Bor. Am.* 2. *p.* 270 ; *Oakes, cat. pl. Vermont, p.* 35 ; *Braun & Engl. l. c. p.* 90.

Stems 6 – 12 inches long ; the little ridges furnished with two rows of siliceous tubercles, which are separated by a furrow, with a single row of stomata on each side. Sheaths blackish ; the teeth 4-carinate, persistent, tipped with slender deciduous awns. Heads resembling those of *E. hyemale*, but smaller.

Wet sandy places, among rocks, near Niagara Falls (*Dr. Kinnicutt*). Our plant agrees well with European specimens of *E. variegatum* in my herbarium.

6. EQUISETUM SCIRPOIDES, *Michx.* *Smallest Rough Horsetail.*

Stems cespitose, much branched from the root, ascending, naked, filiform, rough ; sheaths blackish, with few awned teeth. — *Michx. fl.* 2. *p.* 281 ; *Pursh, fl.* 2. *p.* 652 ; *Bigel. fl. Bost. p.* 384 ; *Braun & Engl. l. c. p.* 91. E. variegatum, *Torr. compend. p.* 390 ; *Beck, bot. p.* 446, not of *Schleich.* E. variegatum, *var.* minus, *Hook. fl. Bor.-Am.* 2. *p.* 270.

Stems growing in dense tufts, 4 – 8 inches long, very slender, persistent through the winter, often curved or flexuous, 5 – 6-angled, much roughened with siliceous concretions. Stomata in single rows. Sheaths minute, blackish, with 3 – 6 subulate whitish awned teeth, the awns of which are more or less deciduous. Spikes ovate-capitate, 2 – 3 lines long, of a blackish color.

Rocky shady places, on springy hill-sides ; northern and western counties. This species, which is the smallest of the genus, grows also in the north of Europe. Hooker considers it a small variety of *E. variegatum*, but I have never seen any intermediate forms.

Order CXXVII. FILICES. *R. Brown.* The Fern Tribe.

Fructification only of one kind on the same individual. Capsules (sporangia) sessile or pedicellate, free, one-celled, mostly surrounded with a more or less complete elastic ring, usually collected in clusters (sori) of various shapes, which arise from veins on the under surface of the leaf or frond, and are either naked or covered with a scale (involucre or indusium) : sometimes the capsules are collected into distinct spikes or racemes. Seeds or sporules very minute. — Trunks or rhizomas mostly creeping (in tropical countries sometimes arborescent), often scaly. Fronds circinate before expansion.

Suborder I. POLYPODIACEÆ. *R. Br.* The Polypody Tribe.

Sori on the back of the frond, usually distinct, but sometimes confluent, naked or furnished with an involucre. Capsules nearly surrounded with an articulated ring, opening elastically and transversely. — Habit various.

CONSPECTUS OF THE GENERA.

* Polypodieæ. Sori round or elongated, without a partial involucre.

1. Polypodium. Sori round. Fertile frond leafy.
2. Struthiopteris. Fertile frond contracted; the margin of the segments revolute, forming a general involucre : sori round, confluent. Pedicels of the capsules united into an elevated receptacle.
3. Allosorus. Sori round or oblong, finally confluent and forming a broad marginal sorus, which is covered by the inflexed margin of the frond. Veins free.

** Pterideæ. Sori roundish or elongated, transverse, marginal or costal, simple or by confluence compound, furnished with a special lateral involucre, the inner margin of which is free.

4. Adiantum. Sori roundish, reniform or linear, marginal. Involucre formed of the altered reflexed margin of the frond or crenules, bearing the sori on its underside.
5. Pteris. Veinlets of the frond direct; their apices combined by a transverse receptacle which bears the capsules, forming a linear continuous or interrupted marginal sorus, which is bordered by the narrow involucre.
6. Platyloma. Sori oblong, laterally confluent, forming a broad continuous marginal sorus. Involucre marginal and continuous. Veinlets free at their summits.
7. Doodia. Sori oblong or linear, parallel and near the midrib. Involucre flat; the inner margin free. Veinlets united near their base, free at the apex.
8. Woodwardia. Sori oblong or linear, parallel and near the midrib. Involucre vaulted, involute. Veins of the sterile frond reticulated.

*** Aspenieæ. Sori elongated, oblique to the axis, simple or double (the two applied back to back or face to face), each furnished with a special lateral linear involucre. Capsules attached to the sides of the veinlets.

9. Scolopendrium. Sori linear, confluent in pairs; the free margins of the involucres facing each other. Veins forked, free.
10. Asplenium. Sori linear, unilateral; the capsules produced on the upper side of the veinlets. Veins forked or pinnate; the veinlets free.
11. Antigramma. Sori linear, unilateral, mostly approximate in pairs and facing each other. Veins reticulated.

**** ASPIDIEÆ. Sori roundish. Involucres orbicular or reniform; either peltate or attached to the inner side of the receptacle, sometimes calyciform and including the capsules.

12. ASPIDIUM. Sori round, seated on the middle or extremity of the veinlets. Involucre peltate or reniform. Fronds 1 – 3-pinnate: veins forked; the veinlets (in N. Amer. species) free.

13. ONOCLEA. Fertile frond contracted; the segments incurved and globose, constituting a general involucre. Sori 4 – 6, confluent, each with a proper cucullate involucre.

14. WOODSIA. Sori round. Involucre calyx-like, open at the top; the margin irregularly lobed or fringed with hairs.

15. CYSTOPTERIS. Sori round, minute. Involucre lateral, oblong-reniform, inflated, cucullate. Veins forked; the veinlets free.

***** DICKSONIEÆ. Sori marginal, globose or oblong, furnished with a special involucre, which is attached to the inside of the sorus, and is combined with the altered margin of the frond.

16. DICKSONIA. Sori arising from the apex of a vein. Involucre 2-valved or entire, sometimes cup-shaped.

* POLYPODIEÆ, J. Sm. *Sori round or elongated, without a partial involucre.*

1. POLYPODIUM. *Linn.; J. Smith, gen. Ferns, in Hook. jour. bot.* 4. *p.* 46.

POLYPODY.

[From the Greek, *polys*, many, and *pous*, foot; from the numerous feet-like branches of the root-stock.]

Sori roundish, scattered on the under surface of the frond. Indusium none. — Ferns of various habit.

* *Frond pinnatifid.*

1. POLYPODIUM VULGARE, *var.* Americanum, *Hook.* *Common Polypody.*

Frond deeply pinnatifid, smooth; segments linear-oblong, obtuse, crenate-serrulate; sori large, distinct. — *Hook. fl. Bor.-Am.* 2. *p.* 208. P. Virginianum, *Linn. sp.* 2. *p.* 1085. P. vulgare, *Bigel. fl. Bost. p.* 388; *Torr. compend. p.* 380; *Beck, bot. p.* 447; *Darlingt. fl. Cest. p.* 575.

Rhizoma thick, creeping, branched, scaly. Fronds 6 – 10 inches long, somewhat coriaceous, smooth, growing in thick patches, 1½ – 2 inches wide: segments mostly alternate, 3 – 4 lines wide, slightly crenate or serrate. Sori nearly a line in diameter, distinct when young, but at length touching each other.

Rocky woods and hill-sides: common. *Fr.* July – August. The American plant differs from the European only in the fronds being narrower and more oblong, the segments more distant, and the sori nearer the margin.

** *Frond bipinnatifid.*

2. POLYPODIUM PHEGOPTERIS, *Linn.* *Beech Polypody.*

Frond bipinnatifid, the two lower pinnæ deflexed; segments linear-oblong, obtuse, entire, ciliate, the lower ones adnate-decurrent; veins hairy; sori mostly solitary, marginal; stipe retrorsely pubescent. — *Linn. sp.* 2. *p.* 1089; *Engl. bot. t.* 224; *Beck, bot. p.* 447; *Hook. fl. Bor.-Am.* 2. *p.* 258 (var. *minus*). P. connectile, *Michx. fl.* 2. *p.* 271; *Willd. sp.* 5. *p.* 200; *Pursh, fl.* 2. *p.* 659; *Bigel. fl. Bost. p.* 389; *Torr. compend. p.* 380.

Rhizoma long and slender, blackish. Stipe 6 – 10 inches long, sparingly chaffy, and clothed with a minute retrorse pubescence. Frond triangular in the outline, 3 – 5 inches long, with numerous opposite linear-lanceolate pinnæ, the lowest of which are usually more or less deflexed; all of them closely approximated, leaving. Rachis and rachillæ chaffy. Veins and margin of the segments distinctly hairy. Sori minute, mostly 4 on each segment, toward the base and near the margin.

Shady woods, chiefly in the northern and western parts of the State. *Fl.* July.

3. POLYPODIUM HEXAGONOPTERUM, *Michx.* *Winged Polypody.*

Frond bipinnatifid; pinnæ rather distant, the lowest ones deflexed; segments lanceolate, obtuse, ciliate, crenate or toothed, glandularly puberulent underneath, the lowest decurrent and forming a conspicuous wing to the rachis; stipe smooth. — *Michx. fl.* 2. *p.* 271; *Willd. sp.* 5. *p.* 200; *Pursh, fl.* 2. *p.* 659; *Torr. compend. p.* 380; *Beck, bot. p.* 447; *Darlingt. fl. Cest. p.* 575. P. Phegopteris, *var.* majus, *Hook. fl. Bor.-Am.* 2. *p.* 258.

Stipe 8 – 15 inches long, slender, quite smooth. Frond triangular in outline; the base 6 – 9 inches wide, and usually exceeding the length: pinnæ connected by the lowest segments, which unite in pairs on each side of the rachis, upon which they are confluent, forming a somewhat panduriform membrane; the under surface minutely glandular, and also pubescent on the veins and rachis. Sori minute, marginal, and forming a single row on the upper divisions, but appearing in a double or triple row on the lower pinnæ, which are more or less deeply toothed, the sori being seated on the margin of the teeth.

Moist and rather shady woods: common. *Fr.* July. Differs from the preceding in its larger size, smooth stipe, glandular under surface of the frond, distant pinnæ, and toothed or crenate segments.

**** Frond ternate, bipinnate.*

4. POLYPODIUM DRYOPTERIS, *Linn.* *Three-branched Polypody.*

Frond ternate; the divisions bipinnate, spreading or deflexed, somewhat rigid; segments oblong, rather obtuse, nearly entire; sori marginal, finally in contact. — *Linn. sp. pl.* (ed. 2.) 2. *p.* 1555; *Engl. bot. t.* 616; *Bigel. fl. Bost. p.* 389; *Torr. compend. p.* 380; *Beck, bot. p.* 448; *Hook. fl. Bor.-Am.* 2. *p.* 259. P. calcareum, *Smith, Engl. bot. t.* 1525; *Pursh, fl.* 2. *p.* 659; *Beck, l. c.* Nephrodium Dryopteris, *Michx. fl.* 2. *p.* 270.

Rhizoma black, creeping, slender. Stipe 6 – 12 inches long, erect, slender but somewhat rigid, smooth. Frond ternately divided, 4 – 6 inches wide, triangular in the outline; the divisions stipitate, of a light green color, and dull: segments 3 – 4 lines long. Sori small, light brown.

Moist shady woods, northern and western counties: frequent. *Fr.* July. This species is common to Europe and North America.

2. STRUTHIOPTERIS. *Willd. sp.* 5. *p.* 288 ; *J. Smith, l. c. no.* 47. *OSTRICH-FERN.*

[From the Greek, *strouthos*, an ostrich, and *pteris*, a fern ; the fronds somewhat resembling the plumes of that bird.]

Fertile fronds contracted ; their margins revolute, connivent, forming a general involucre. Sori round, confluent, naked ; the pedicels of the capsules cohering at the base, forming an elevated thickened receptacle. — Fronds large, bipinnatifid ; the fertile pinnæ linear, revolute, moniliform, each segment producing 5 pinnate free veins, bearing clusters of capsules at their extremity ; the margin of the segments incurved and lacerate.

1. STRUTHIOPTERIS GERMANICA, *Willd.* *Common Ostrich-fern.*

Willd. l. c. ; Beck, bot. p. 456 ; *Hook. fl. Bor.-Am.* 2. *p.* 262. S. Pennsylvanica, *Willd. l. c. ; Pursh, fl.* 2. *p.* 666 ; *Bigel. fl. Bost. p.* 392 ; *Torr. compend. p.* 385. Osmunda Struthiopteris, *Linn. sp.* 2. *p.* 1066. Onoclea Struthiopteris, *Schk. Fil. t.* 105, and O. nodulosa, *ejusd. t.* 104, fide *Hook.* O. nodulosa, *Michx. fl.* 1. *p.* 272?

Sterile fronds 2 – 3 feet high, forming tufts ; the pinnæ numerous, deeply pinnatifid, sessile : segments entire, rather acute ; the veins pinnate, unconnected : stipe smooth and angular. Fertile fronds shorter than the sterile, but with a thicker stipe. Pinnæ very numerous and crowded, 1 – 2 inches long, almost terete when dry ; the segments incurved, and filled with the confluent sori. Pedicels of the capsules persistent, united below, and forming a thick brush-like elevated stalk or receptacle.

Low grounds, and borders of rivers, in rich soil ; western part of the State : rare. *Fr.* July – August. The North American plant is considered distinct from the European by some botanists, but I agree with Beck and Hooker in regarding them as one species.

3. ALLOSORUS. *Bernh. ; J. Smith, l. c. no.* 7. *ALLOSORUS.*

[From the Greek, *allos*, various, and *soros*, a heap ; probably in allusion to the changing appearance of the sori at different ages of the plant.]

CRYPTOGRAMMA, *R. Br.*

Sori round or oblong, at first distinct, at length laterally confluent, forming a broad intramarginal compound transverse sorus. — Fronds bi-tripinnate ; the fertile ones contracted : margins free, revolute, connivent, forming a general involucre. Veins forked, free, bearing the capsules at their apices.

1. ALLOSORUS GRACILIS, *J. Sm.* *Slender Allosorus.*

Frond lanceolate, smooth ; the sterile pinnate, with pinnatifid divisions and few broadly ovate obtuse segments ; the fertile bipinnate, with linear-oblong acute somewhat crenate segments ; rachis smooth. — *J. Smith, l. c.* Pteris gracilis, *Mich. fl.* 2. *p.* 262 ; *Pursh, fl.* 2. *p.* 668 ; *Beck, bot. p.* 454 ; *Hook. fl. Bor.-Am.* 2. *p.* 264. Cheilanthes gracilis, *Spreng.*

Stipe 1 – 3 inches long, dark brown and shining. Frond 2 – 3 inches long, thin and membranaceous; the sterile with shorter and broader segments than the fertile. Veins of the sterile segments branched; of the fertile nearly simple, bearing at their extremities the distinct but approximated sori. Involucres membranaceous, broad, their free margins (in the narrowest segments) extending nearly to the midrib.

Rocks, near Whitehall (*Dr. L. C. Beck*); Yates county (*Dr. Sartwell*); and in the northern part of the State: rare. *Fr.* July – August. In this genus the apices of the veins, instead of being combined in a prominent continuous transverse receptacle, as in *Pteris Aquilina*, are free, and bear the roundish sori, which are at first quite distinct, but finally confluent.

** PTERIDEÆ, J. Sm. *Sori round or elongated, transverse, marginal or costal, simple or by confluence compound, furnished with a special lateral involucre, the inner margin of which is free.*

4. ADIANTUM. *Linn.; J. Smith, l. c. no.* 54. *MAIDENHAIR.*

[From the Greek, *adiantos*, dry; because the surface repels moisture.]

Sori round, oblong, reniform or linear, marginal. Involucres formed of the reflexed and altered margin of the segments of the frond, bearing the sori on the underside. — Fronds various, often simple and reniform, or more or less compound: pinnæ commonly oblique, truncate or cuneate at the base, their petioles articulated. Veins unilateral or radiating, forked. Stipe usually black and polished.

1. ADIANTUM PEDATUM, *Linn.* *Maidenhair. Mowhair.*

Frond pedate, the divisions pedate; segments dimidiate, triangular-oblong or somewhat ternate, the upper margin incisely lobed and serrate; sori lunate. — *Linn. sp.* 2. *p.* 1095; *Michx. fl.* 2. *p.* 263; "*Schk. Fil. t.* 124;" *Pursh, fl.* 2. *p.* 670; *Bigel. fl. Bost. p.* 395; *Torr. compend. p.* 384; *Beck, bot. p.* 445; *Darlingt. fl. Cest. p.* 583.

Stipe smooth except near the base, blackish and shining, 8 – 12 inches or more in length, erect, pedately branching at the summit first into 2 primary forks, and then into several spreading divisions, each of which bears numerous regular alternate segments or leaflets. The frond is glaucous, green, very smooth, of a thin and delicate texture. Segments on short stalks, entire on the lower margin, the upper side cut into several teeth or lobes: veins unilateral; the forks terminating in the involucre, which bears the capsules on its under surface.

Shady woods: common. *Fr.* July. This is perhaps the most graceful and delicate of North American ferns.

5. PTERIS. *Linn.; Agardh, sp. gen. Pterid.; J. Smith, l. c. no.* 60. *BRAKE.*

[From the Greek, *pteryx* or *pteron*, a wing or feather; in allusion to the form of the frond.]

Sori marginal, linear, continuous or interrupted, formed of a transverse receptacle which connects the apices of the veinlets. Involucre linear, narrow, occupying the margin of the frond; the inner side free. — Fronds varying from pinnate to decompound; the segments usually lobed or pinnatifid. Veins mostly forked; the branches direct, their apices united in the receptacle of the capsules.

1. PTERIS AQUILINA, *Linn.* *Common Brake*, or *Bracken.*

Frond 3-parted, the branches bipinnate; pinnulæ oblong-lanceolate, the lower ones pinnatifid, upper ones entire; segments oblong, obtuse. — *Linn. sp.* 2. *p.* 1075; *Michx. fl.* 2. *p.* 262; *Pursh, fl.* 2. *p.* 688; *Bigel. fl. Bost. p.* 394; *Torr. compend. p.* 384; *Beck, bot. p.* 445; *Darlingt. fl. Cest. p.* 583; *Agardh, l. c. p.* 49; *Hook. fl. Bor.-Am.* 2. *p.* 263. P. caudata, *Pursh, l. c.* excl. syn.

Stipe 1 – 2 feet long, smooth, angular, light brown. Frond 1 – 2½ feet in diameter, bi-triternately divided, somewhat coriaceous, dull green; the pinnules 1 – 2 inches long: lower ones of each division more or less pinnatifid; some of them with only a few lobes, or a single lobe on the lower side of the base, giving them an auricled appearance. Sori uninterrupted; the receptacle thickened. Involucre narrow.

Woods and thickets: very common. *Fr.* July – August. Our plant agrees in every respect with my European specimens.

6. PLATYLOMA. *J. Smith, l. c. no.* 53. *PLATYLOMA.*

[From the Greek, *platys*, broad, and *loma*, a fringe; in allusion to the broad marginal sori.]

Species of PTERIS, *Linn. & others.*

Sori oblong, laterally confluent, constituting a broad continuous compound marginal sorus. Involucre marginal and continuous; the inner margin free. — Fronds pinnate or bipinnate: pinnæ stalked. Veins forked; the veinlets direct, free at their apices, bearing capsules along a portion of the upper part, and, being closely approximated, form a broad compound sorus.

Differs from PTERIS, in the apices of the veinlets being free, not combined by a transverse receptacle.

1. PLATYLOMA ATROPURPUREA, *J. Sm.* *Purple-stalked Rock-brake.*

Frond pinnate or somewhat bipinnate, the lower divisions ternate or pinnate; segments oblong, obtuse, entire, obliquely truncate or cordate at the base; stipe a little hairy. — *J. Sm. l. c.; Linn. sp.* 2. *p.* 1076; *Michx. fl.* 2. *p.* 261; *Pursh, fl.* 2. *p.* 668; *Torr. compend. p.* 384; *Beck, bot. p.* 454; *Agardh, l. c.; Darlingt. fl. Cest. p.* 583.

Stipe 2 – 4 inches long, dark purple, often tortuous, terete, slender, somewhat pubescent with roughish hairs. Frond 4 – 8 inches long, of a dull grayish-green color, rather coriaceous, smooth; the lower divisions often pinnate, with 3, 5 or 7 segments; the lowest segments sometimes hastate or auriculate, revolute when young. Sori continuous, forming a prominent margin. Involucre membranaceous, slightly crenate.

Limestone rocks : not common. *Fr.* June – July. The segments of the barren fronds are rather broader than those of the fertile ones.

7. DOODIA. *R. Br. prodr. p.* 151 ; *Presl, Pterid. p.* 99. *t.* 3 *f.* 18 ; *J. Smith, l. c. no.* 65.
DOODIA.

[In memory of SAMUEL DOODY, one of the first investigators of British cryptogamous plants.]

Sori oblong or linear, straight or curved, distinct, parallel and near to the midrib, produced on the transverse anastomosing veins. Involucre flat, lateral; the free margin opening inwards. — Frond pinnatifid or pinnate : pinnæ sometimes pinnatifid; the margin spinulose-serrulate. Veins forked; the venules anastomosing near their base and forming large areolæ, free toward the margin.

1. DOODIA VIRGINICA, *Presl.* *Virginian Doodia.*

Fronds pinnate, fertile and sterile similar; the pinnæ pinnatifid, lanceolate. — *Presl, l. c.; J. Smith, l. c.* Woodwardia Virginica, *Swartz, syn. Fil.; Willd. sp.* 5. *p.* 418; *Pursh, fl.* 2. *p.* 670; *Bigel. fl. Bost. p.* 394; *Torr. compend. p.* 384; *Beck, bot. p.* 454. W. Banisteriana, *Michx. fl.* 2. *p.* 263. Blechnum Virginicum, *Linn. mant. p.* 307. B. Carolinianum, *Walt. fl. Car. p.* 257.

About 2 feet high, growing in tufts, smooth; the stipe and rachis varying from light to dark brown. Frond oblong-lanceolate in the outline, of a thickish texture : pinnæ numerous, opposite or alternate, 2 – 3 inches long : segments oblong, rather obtuse, slightly incurved; the margin serrulate and somewhat cartilaginous. Veins of the segments forking near the base, where they anastomose with each other and with the veins of the contiguous segments, and then proceed directly to the margin. On the anastomosing veins, which are near the midrib, the sori are situated. These are linear, and form a row on each side of the midrib of the pinnæ and segments; when old, they are somewhat confluent.

Swamps, Long Island, &c. : rare in the interior of the State. *Fr.* July. The genus DOODIA differs from WOODWARDIA in its more compound anastomosing veins and revolute vaulted involucre.

8. WOODWARDIA. *J. E. Smith, in mém. acad. Tur.* 5. *p.* 411 ; *J. Smith, l. c. no.* 66.
WOODWARDIA.

[In compliment to Thomas J. Woodward, a practical English botanist.]

Sori oblong or linear, straight, distinct, parallel and near to the midrib, produced on the transverse anastomosing veins. Involucre involute, vaulted. — Frond pinnate or bipinnatifid ; the fertile often contracted, serrulate or spinulose on the margin : veins reticulated ; the veinlets free toward the margin, but forming large oblong areolæ by anastomoses near their bases.

1. Woodwardia angustifolia, *J. E. Smith.* *Narrow-leaved Woodwardia.*

Sterile frond pinnatifid, with lanceolate-serrulate segments ; fertile frond pinnate ; the pinnæ linear, entire, acute. — *J. E. Smith, l. c.* W. onocleoides, *Willd. sp.* 5. *p.* 416 ; *Pursh, fl.* 2. *p.* 669 ; *Bigel. fl. Bost. p.* 394 ; *Torr. compend. p.* 384 ; *Beck, bot. p.* 454. W. Floridana, " *Schk. Fil. t.* 111." Onoclea nodulosa, *Michx. fl.* 2. *p.* 272.

About eighteen inches or two feet high. Whole plant smooth, except the lower part of the stipe, which is somewhat chaffy. Sterile frond deeply pinnatifid ; the segments 8 – 12 on each side, alternate, about 3 inches long and three-fourths of an inch wide, of a thin and membranaceous texture, distinctly and sharply serrulate ; the veins much reticulated. Fertile frond with the pinnæ 2 – 4 lines wide, remotely and obscurely denticulate ; the margin often revolute : veins few and slightly reticulated. Sori 3 – 4 lines long, prominent, in pairs which are parallel with and near the midrib. Involucre with the free edge folded inward upon itself.

Swamps : rare. Staten Island, about 3 miles south of the Quarantine ; Long Island (*Mr. Cooley*). *Fr.* August.

*** Asplenieæ, J. Sm. *Sori elongated, oblique to the axis, simple or confluent in pairs, each furnished with a special lateral linear involucre. Capsules attached to the sides of the veinlets.*

9. SCOLOPENDRIUM. *J. E. Smith, l. c.* 5. *p.* 411 ; *J. Smith, l. c. no.* 67.
HART'S-TONGUE.

[The under part of the frond presents somewhat the appearance of the insect called *Scolopendra.*]

Sori linear, confluent in pairs face to face. Involucre apparently double, occupying both sides of the double sorus ; the margins free on the inside. — Fronds linear-lanceolate, entire or divided at the apex, sometimes pinnate. Veins forked ; the veinlets free.

1. Scolopendrium officinarum, *J. E. Sm.* *Common Hound's-tongue.*

Frond simple, rarely bifid at the extremity, ligulate, entire, cordate at the base. — *J. E. Smith ; Engl. bot. t.* 1150 ; *Pursh, fl.* 2. *p.* 667 ; *Nutt. gen.* 2. *p.* 251 ; *Torr. compend. p.* 384 ; *Beck, bot. p.* 454. Asplenium Scolopendrium, *Linn. sp.* 2. *p.* 1079.

A fern growing in thick tufts. Stipe 3 – 5 inches long, chaffy. Frond 9 – 15 inches long and 1 – 2 inches wide, bright green, pale underneath, often waved on the margin; the base cordate-auriculate; the apex rarely 2-forked: veins free, parallel, direct. Sori very large, linear; each one formed, indeed, of two closely approximated unilateral sori, which are confluent; the involucres connivent, with their free margins nearly meeting when young, but finally turned outward by the growth of the capsules.

Limestone rocks along Chittenango creek, near the falls: abundant. *Fr.* July. This fern is undoubtedly indigenous in the locality here given, which is the only place where it has hitherto been found in North America. It was first detected in North America by Pursh, who found it in "shady woods among loose rocks near Onondaga, on the plantation of J. Geddis, Esq." Nuttall (*l. c.*) states that he found it in the western part of the State, without giving the locality; but according to my friend Dr. Pickering, the specimens of Mr. Nuttall, in the herbarium of the Academy of Sciences in Philadelphia, are marked "near Canandaigua, at Geddis's Farm, in a shady wood, with *Taxus Canadensis*."

10. ASPLENIUM, *Linn.*; *J. Smith, l. c. no.* 69. *SPLEENWORT.*

[From the Greek, *a*, privative, and *splen*, the spleen; because of its supposed medicinal virtues.]

Sori linear, oblique, scattered. Involucre plain or vaulted, opening longitudinally on the side toward the midrib. — Habit various. Veins of the frond forked or pinnated; the branches direct, bearing the capsules on their upper side.

* ASPLENIUM proper, J. Sm. *Fronds simple or pinnate; the margin entire or crenate. Sori usually equal on both sides of the midrib.*

1. ASPLENIUM TRICHOMANES, *Linn.* *Small Rock Spleenwort.*

Frond pinnate; pinnæ roundish-obovate or oval, cuneate at the base or obliquely truncate, crenate; sori linear-oblong, 3 – 6 on each pinna; stipe and rachis shiny, dark purple. — *Linn. sp.* 2. *p.* 1080; *Engl. bot. t.* 576; *Michx. fl.* 2. *p.* 264; *Bigel. fl. Bost. p.* 392; *Torr. compend. p.* 382; *Beck, bot. p.* 453; *Darlingt. fl. Cest. p.* 581. A. melanocaulon, *Willd. sp.* 5. *p.* 332; *Pursh, fl.* 2. *p.* 666.

Fronds growing in dense spreading tufts, 3 – 8 inches long. Stipes filiform, smooth and polished, semiterete. Pinnæ 3 – 4 lines long, oblique, entire and more or less cuneate at the base, sometimes auriculate on the upper side, irregularly crenate, without a distinct midrib; the veins branching and forking from the base. Sori mostly 4 or 5 on each pinna, nearly oval when old.

Shady rocks, particularly on the side towards the north. *Fr.* July. Our plant seems to be identical with the European *A. Trichomanes*.

2. ASPLENIUM EBENEUM, *Willd.* *Screw-fern.*

Frond pinnate ; pinnæ lanceolate-oblong, somewhat falcate, serrate, sessile, auriculate at the base on the upper side ; stipe and rachis dark purple, smooth and shining. — *Willd. sp.* 5. *p.* 329 ; *Pursh, fl.* 2. 666 ; *Bigel. fl. Bost. p.* 393 ; *Torr. compend. p.* 383 ; *Beck, bot. p.* 453 ; *Darlingt. fl. Cest. p.* 581. A. trichomanoides, *Michx. fl.* 2. *p.* 265.

An upright straight fern, 8 – 14 inches high ; the frond lanceolate-linear in outline. Pinnæ numerous, 5 – 8 lines long, often slightly twisted, so that at a distance the frond has a spiral appearance. Veins pinnate, forked, free. Sori 12 – 20 on each pinna, oblong, finally confluent. Involucre very thin and membranaceous.

Rocky woods : common. *Fr.* July.

3. ASPLENIUM ANGUSTIFOLIUM, *Michx.* *Narrow-leaved Spleenwort.*

Frond pinnate ; pinnæ linear-lanceolate, acute, crenate-serrulate, somewhat repand ; the base truncate on the lower side, rounded on the upper. — *Michx. fl.* 2. *p.* 265 ; " *Schk. Fil. t.* 67 & 69 " ; *Pursh, fl.* 2. *p.* 666 ; *Bigel. fl. Bost. p.* 393 ; *Torr. compend. p.* 383 ; *Beck, bot. p.* 452.

About 18 inches or 2 feet high, erect. Stipe and rachis minutely dotted. Sterile frond oblong in outline ; the pinnæ 2 – 4 inches long and about half an inch broad, very thin and delicate, nearly sessile ; the veins forking near their base, and then often again divided, but never anastomosing. Fertile fronds much narrower, attenuate at the apex : pinnæ 1 – 2 inches long, lanceolate-linear, often somewhat falcate ; the lower ones rather erect. Sori oblong-linear, arising from the upper fork of the veins, closely approximated, and extending from near the midrib to within a short distance of the margin, finally confluent. Involucre vaulted, thick, and somewhat leathery.

Shady moist woods, western and northern parts of the State ; also on Long Island, about three miles from Brooklyn. *Fr.* July.

** ACROPTERIS, Link. *Fronds pinnate, bipinnate or forked ; segments laciniate or serrate ; midrib indefinite or wanting ; the veins radiating from the base.*

4. ASPLENIUM RUTA-MURARIA, *Linn.* *Wall-rue Spleenwort.*

Frond bipinnate below, simply pinnate above ; segments rhomboid-cuneate, toothed at the extremity. — *Linn. sp.* 2. *p.* 1081 ; *Engl. bot. t.* 150 ; *Michx. fl.* 2. *p.* 268 ; *Pursh, fl.* 2. *p.* 667 ; *Bigel. fl. Bost. p.* 393 ; *Torr. compend. p.* 383 ; *Beck, bot. p.* 453 ; *Darlingt. fl. Cest. p.* 582.

Whole plant 2 – 4 inches long, smooth ; the frond ovate in outline, somewhat rigid, glaucous green : segments few and distant and somewhat ternate, 2 – 4 lines long, tapering at the base in a petiole ; the extremity cut into irregular obtuse or acute teeth. Sori linear-oblong, large for the size of the frond. Involucre membranaceous.

Limestone rocks, usually in shady situations : rare. *Fr.* July. In all respects similar to the European plant, except that it is usually smaller.

Subgenus ATHYRIUM, Roth. *Fronds bi-tripinnatifid : ultimate segments toothed or deeply laciniate. Sori short, sometimes double, mostly seated on the middle or lower part of the venules. Involucre vaulted ; the extremities free.*

5. ASPLENIUM THELYPTERIOIDES, *Michx.* *Silvery Spleenwort.*

Frond pinnate ; the pinnæ linear-lanceolate, deeply pinnatifid ; segments oblong, obtuse, denticulate-serrate ; sori linear-oblong, nearly straight, in approximated parallel lines. — *Michx. fl.* 2. *p.* 265 ; *Pursh, fl.* 2. *p.* 667 ; *Bigel. fl. Bost. p.* 393 ; *Torr. compend. p.* 383 ; *Beck, bot. p.* 453 ; *Darlingt. fl. Cest. p.* 581. Diplazium thelypterioides, *Presl.*

A smooth fern, 1½ – 2 feet high. Stipe light brown. Frond oblong-lanceolate, glaucous green ; the pinnæ numerous, alternate and sessile, pinnatifid nearly to the partial rachis : segments 4 – 6 lines long ; the veins forked or simple. Sori usually arising only from the upper side of the veins near the base, but sometimes also the lower side, when the sori are double and applied back to back, as are likewise the involucres. There are from 10 to 14 sori on each segment, arranged obliquely on both sides of the midrib, forming a double row, finally almost confluent. The involucre is vaulted, and of a firm texture, and of a whitish or almost silvery color when young.

Moist rocky woods, commonly in shady places : frequent. *Fr.* July. In some specimens a large proportion of the sori are double, in which state the plant was probably examined by Presl, who referred it to DIPLAZIUM.

6. ASPLENIUM FILIX-FŒMINA, *R. Br.* *Female-fern.*

Frond bipinnate ; pinnules varying from oblong to linear-lanceolate ; segments oblong-lanceolate, incisely and rather obtusely serrate, the serratures toothed ; sori oblong, at first nearly straight, finally lunate and recurved. — *R. Br. prodr. p.* 150; *Spreng. syst.* 4. *p.* . . ; *Hook. Brit. fl.* (*ed.* 3.) *p.* 453 ; *J. Smith, l. c.* A. Athyrium, *Schk. Fil. t.* 78 (ex *Hook.*) ; *Spreng. l. c.* A. Michauxii, *Spreng. l. c.* Aspidium Filix-fœmina, *Swartz ; Eng. bot. t.* 1459 ; *Willd. sp.* 5. *p.* 276 ; *Pursh, fl.* 2. *p.* 664 ; *Beck, bot. p.* 455. A. asplenioides, *Swartz ; Willd. l. c. ; Pursh, l. c. ; Torr. compend. p.* 382 ; *Beck, l. c. ; Darlingt. fl. Cest. p.* 579. A. angustum, *Willd. l. c. ; Pursh, l. c.* Nephrodium asplenioides & Filix-fœmina, *Michx. fl.* 2. *p.* 268. Athyrium Filix-fœmina, *Roth. ; Hook. fl. Bor.-Am.* 2. *p.* 262.

Whole plant smooth, 1½ – 2½ feet high. Stipe tawny. Outline of the frond varying from oblong to lanceolate : pinnæ 2 – 5 inches long, acuminate : segments 4 – 6 lines long, decurrent at the base on the secondary rachis, doubly dentate-serrate. Sori 10 – 16 on each segment, with sometimes an additional sorus on the lowest tooth of the upper side, one corresponding to each tooth, and seated on the upper side of the lowest veinlet or that which leads to the sinus, near the midrib ; at first linear-oblong, but becoming recurved by the growth of the capsules, so that the back of the involucre is sometimes doubled upon itself. Involucre membranaceous, somewhat vaulted ; the upper extremity free.

Moist shady woods : common. *Fr.* July. This species has been referred to ASPIDIUM by nearly all North American botanists, but it is certainly a congener of the preceding ferns, and we think an undoubted ASPLENIUM. Like the European plant, it varies considerably in the breadth of the frond and in some other unimportant characters, but is always easily recognized.

11. ANTIGRAMMA. *Presl; J. Smith, l. c. no.* 72. *ANTIGRAMMA.*

[From the Greek, *anti*, like, and *gramma*, writing; in allusion to the appearance of the sori.]

ASPLENII, *spp. auct.*; CAMPTOSORUS, *Presl.*

Sori linear, unilateral, mostly approximated in pairs and facing each other, scattered. Involucre linear ; one margin free. — Fronds simple, lanceolate, cordate, entire or sinuate, smooth : veins forked, reticulated ; the marginal veinlets free.

Differs from ASPLENIUM in its reticulated veins, and in habit.

1. ANTIGRAMMA RHIZOPHYLLA, *J. Smith.* (Plate CLIX.) *Walking-fern.*

Frond lanceolate, somewhat crenate (rarely sinuate), auriculate-cordate at the base; the point very long and attenuated, often rooting at the extremity. — *J. Smith, l. c.* Asplenium rhizophyllum, *Linn. sp.* 2. *p.* 1078 ; *Michx. fl.* 2. *p.* 264 ; *Pursh, fl.* 2. *p.* 666 ; *Bigel. fl. Bost. p.* 392 ; *Torr. compend. p.* 382 ; *Beck, bot. p.* 452 ; *Darlingt. fl. Cest. p.* 580. Camptosorus rhizophyllus, *Presl, l. c.*

A prostrate creeping fern, growing in dense patches, often entangled. Frond smooth, 4–8 inches long and from half an inch to an inch wide at the base, tapering to a very long almost filiform point, which often takes root at the end, forming a tuft of new fronds ; the margin usually entire or obscurely crenate, but sometimes deeply and irregularly sinuate. Sometimes the frond is bifid, with two long points, and occasionally one of the divisions is again forked. The base also is often hastate, or conspicuously auricled. Veins reticulated, forming large oblong areolæ. Sori scattered ; some of them produced from the upper, others from the under side of the primary veinlets, often approximating in pairs, which are sometimes confluent (as in SCOLOPENDRIUM).

Moist rocks, generally on limestone : not common. *Fr.* July. Endlicher refers this species to SCOLOPENDRIUM, of which it forms his section CAMPTOSORUS.

**** ASPIDIEÆ, J. Sm. *Sori roundish. Involucres orbicular, reniform or cucullate, either peltate or attached to the inner side of the receptacle, rarely calyciform and including the capsules.*

12. ASPIDIUM *Swartz, synop. Fil. p. 3.* *SHIELD-FERN.*

[From the Greek, *aspis*, a shield; in allusion to the form of the involucre.]

LASTREA, *Borg.*; POLYSTICHUM, *Roth.*; HYPOPELTIS, *Michx.*

Sori round, seated on the middle or extremity of the veinlets. Involucres orbicular and central, or reniform and lateral. — Fronds mostly pinnate, or bi-tripinnate : segments often serrate : veins forked or pinnate; the veinlets free, direct (sometimes anastomosing, but not in any of the following species).

1. ASPIDIUM MARGINALE, *Swartz.* *Marginal Shield-fern.*

Frond bipinnate; pinnata lanceolate; segments oblong, obtuse, crenate-serrate, decurrent, the lower ones nearly distinct; sori nearly marginal, distinct; stipe chaffy. — *Swartz, l. c.; Wild. sp. 5. p. 259; Pursh, fl. 2. p. 662; Bigel. fl. Bost. p. 391; Torr. compend. p. 382; Beck, bot. p. 450; Darlingt. fl. Cest. p. 578.* Polypodium marginale, *Linn. sp. 2. p. 1091.* Nephrodium marginale, *Michx. fl. 2. p. 267.* Lastrea marginale, *J. Smith, l. c.*

Stipe chaffy, with large brown scales, stout, 5 – 8 inches long. Frond ovate-oblong, 12 – 18 inches long, and 5 – 7 inches wide, smooth, bluish-green, of a firm texture : segments 8 – 10 lines long, often a little falcate; the lower ones abruptly contracted at the base, and then decurrent : midrib flexuous, the veins ramified. Sori the size of a common pin's head, 10 – 14 on each segment, terminating the veinlets near the sinuses of the teeth. Involucre peltate-reniform, finally stipitate and somewhat funnel-form by the growth of the capsules around it.

Rocky moist woods and hill-sides : common. *Fr.* July.

2. ASPIDIUM GOLDIANUM, *Hook.* *Goldie's Shield-fern.*

Frond pinnate, broadly ovate; pinnæ deeply pinnatifid, lanceolate; segments oblong, rather acute, somewhat falcate, with remote appressed serratures; sori near the midrib; stipe and rachis somewhat chaffy. — *Hook. in Edinb. new phil. jour. 6. p. 333, & fl. Bor.-Am. 2. p. 260; Hook. & Grev. ic. Fil. t. 102; Torr. compend. p. 381; Beck, bot. p. 450.* A. Filix-mas, *Pursh, fl. 2. p. 662,* not of *Willd.* Lastrea Goldiana, *J. Smith.*

Whole plant, except the stipe, smooth, 2 feet or more in height. Frond 6 – 12 inches wide, bright yellowish green : pinnæ alternate, acute : segments about three-fourths of an inch in length, closely approximated; the veins forked, the first fork from the upper side of each primary vein, bearing a sorus. Sori 12 – 16 on the lower segments. Involucre reniform-peltate.

Shady moist woods, in rich soil. Northern and western counties; also on Long Island. *Fr.* July.

3. ASPIDIUM CRISTATUM, *Swartz.* *Crested Shield-fern.*

Frond pinnate, lanceolate, somewhat rigid ; pinnæ oblong or triangular-ovate, deeply pinnatifid, somewhat cordate ; segments oblong, obtuse, doubly serrate ; sori near the midrib, large ; involucre orbicular-reniform ; stipe nearly naked. — *Swartz. syn. Fil.* ; *Willd. sp.* 5. *p.* 252 ; *Pursh, fl.* 2. *p.* 661 ; *Engl. bot. t.* 2125 ; *Beck, bot. p.* 449. A. cristatum, *β.* Lancastriense, *Torr. compend. p.* 577. A. Lancastriense, *Spreng.* ; *Bigel. fl. Bost. p.* 391 ; *Beck, l. c.* ; *Darlingt. fl. Cest. p.* 577 ; *Hook. fl. Bor.-Am.* 2. *p.* 261. Lastrea cristata, *Presl.*

Stipe rather stout, varying from tawny to brown. Frond 1½ – 2 feet long and 3 – 5 inches wide, somewhat uniform in its breadth, except towards the summit, bright green : pinnæ opposite or alternate ; the lowest ones broad at the base : segments 6 – 8 lines long, sharply (and the lower ones doubly) serrate. Sori rather large, 10 – 14 on each segment, situated as in the preceding species, finally somewhat confluent. Involucre smooth, becoming funnel-form and stipitate by the growth of the capsules around it.

Moist woods and borders of swamps : rare. *Fr.* July. I entirely agree with Hooker in regarding this fern as identical with the European *A. cristatum.*

4. ASPIDIUM DILATATUM, *Swartz.* *Dilated Shield-fern.*

Frond bipinnate ; the pinnules deeply and incisely pinnatifid ; segments or laciniæ mucronate-serrate ; sori minute, distinct, situated about the middle of the pinnules, in a double row ; involucre orbicular-reniform ; stipe chaffy. — *Swartz, l. c.* ; *Willd. sp.* 5. *p.* 263 ; *Pursh, fl.* 2. *p.* 663 ; *Torr. compend. p.* 382 ; *Beck, bot. p.* 450 ; *Darlingt. fl. Cest. p.* 578. A. intermedium, *Muhl. in Willd. sp. l. c.* ; *Pursh, l. c.* A. spinulosum, *Willd. l. c.* ? *Pursh, l. c.* Nephrodium cristatum, *Michx. fl.* 2. *p.* 269. Lastrea dilatata, *J. Sm.*

Stipe 6 – 10 inches long, rather slender, pale brown, more or less chaffy with thin brown scales. Frond 1 – 1½ foot long, ovate-lanceolate in outline, thin, light green : pinnæ numerous, mostly opposite : pinnules cut into small ovate or oblong segments or laciniæ, which again are incisely serrate ; the serratures acuminate and mucronate at the tip. Sori scarcely the size of the smallest pin's head, situated about the middle of the base of the laciniæ. Involucre light brown, umbilicate in the centre, smooth or slightly glandular-pubescent.

Shady woods and thickets : frequent. *Fr.* July. Hooker refers this species to *A. spinulosum* of Willdenow, to which he also adds *A. dumetorum*, Sm., and *Nephrodium expansum*, Presl.

5. ASPIDIUM THELYPTERIS, *Swartz.* *Meadow Shield-fern. Lady-fern.*

Frond pinnate ; pinnæ linear-lanceolate, sessile, gradually diminishing in length from below upward, deeply pinnatifid ; segments ovate-oblong, rather acute, the margin slightly crenulate,

revolute when in fruit; sori small, nearly medial, contiguous and finally confluent. — *Swartz, l. c.; Engl. bot. t.* 1018; *Willd. sp.* 5. *p.* 249; *Pursh, fl.* 2. *p.* 661; *Bigel. fl. Bost. p.* 390; *Torr. compend. p.* 381; *Beck, bot. p.* 449; *Darlingt. fl. Cest. p.* 577. Polypodium Thelypteris, *Linn. mant. p.* 505. Lastrea Thelypteris, *J. Sm.*

Stipe about a foot long, smooth and naked. Frond 10 – 12 inches long and 4 – 5 inches wide, oblong-lanceolate in outline; the pinnæ mostly opposite, very numerous, pinnatifidly cut into numerous small segments nearly down to the midrib, the lower ones longest: segments 3 – 4 lines long, varying from rather acute to obtuse; the margin obscurely crenulate or entire, finally revolute, smooth above, a little hairy underneath: veins mostly simple, sometimes forked. Sori situated rather below the middle of the veins, between the margin and the midrib. Involucres orbicular-reniform.

Swamps and wet thickets: frequent. *Fr.* July. A common European species.

6. ASPIDIUM NOVEBORACENSE, *Willd.* *New-York Shield-fern.*

Frond pinnate; the pinnæ linear-lanceolate, sessile, the lowest ones gradually smaller and usually deflexed, deeply pinnatifid; the segments oblong, obtuse, entire, flat, ciliate; sori minute, nearly marginal, distinct. — *Willd. sp.* 5. *p.* 248; *Pursh, fl.* 2. *p.* 661; *Bigel. fl. Bost. p.* 390; *Torr. compend. p.* 381; *Beck, bot. p.* 449; *Darlingt. fl. Cest. p.* 577. A. thelypterioides, *Swartz, Fil. p.* 57. Polypodium Noveboracense, *Linn. sp.* 2. *p.* 1091. Nephrodium thelypterioides, *Michx. fl.* 2. *p.* 267. Lastrea Noveboracense, *J. Sm.*

About as large as the preceding species; the stipe and rachis smooth or a little pubescent. Frond of a thin and delicate texture, pale green and dull: several of the lowest pinnæ gradually diminishing in size downward: veins of the segments always simple, bearing the sori a short distance from the margin. Involucre orbicular-reniform.

Moist woods and thickets: common: often sterile. *Fr.* July. This species is certainly very closely allied to *A. Thelypteris*, and is considered identical with it by Hooker. If the characters given above prove to be constant, they must be distinct; but I suspect that intermediate forms sometimes occur.

7. ASPIDIUM ACROSTICHOIDES, *Swartz.* *Terminal Shield-fern.*

Frond pinnate; segments linear-lanceolate, nearly sessile, acute, somewhat falcate, mucronate-serrulate, auriculate at the base on the upper side, the upper ones smaller and fertile; sori finally confluent; stipe and rachis chaffy. — *Swartz, l. c.; Willd. sp.* 5. *p.* 225; *Pursh, fl.* 2. *p.* 661; *Bigel. fl. Bost. p.* 389; *Torr. compend. p.* 381; *Beck, bot. p.* 448; *Darlingt. fl. Cest. p.* 576. Nephrodium acrostichoides, *Michx. fl.* 2. *p.* 267. Polystichum acrostichoides, *J. Sm.*

var. *incisum*: segments unequally and incisely toothed; sori mostly distinct. — *Gray, in ann. lyc. N.-York*, 3. *p.* 238. A. Schweinitzii, *Beck, l. c.*

An erect straight fern about a foot and a half high, growing in clusters. Stipe and rachis very chaffy, with lanceolate scales. Frond lanceolate in the outline : sterile pinnules or segments alternate, 1 – 2 inches long, each on a very short stalk, with a conspicuous triangular auricle at the base on the upper side ; the serratures ending in a short bristle : fertile segments much smaller than the sterile, constituting the upper part of the frond. Sori rather large, arising from the extremity of all the veinlets but the terminal ones, at first somewhat distinct, finally confluent, and forming a thick covering to the lower part of the segment. Involucre orbicular-reniform.

Shady rocky hill-sides : common ; the variety *incisum*, in shady ravines near Hamilton College (*Dr. Gray*). *Fr.* June – August.

8. ASPIDIUM ACULEATUM, *Swartz.* *Prickly Shield-fern.*

Frond bipinnate ; pinnules ovate, somewhat falcate, slightly petioled, acute, mucronately serrate, truncate and auricled at the base on the upper side, obtusely cuneate on the lower, upper ones fructiferous ; stipe and rachis chaffy. — *Swartz, l. c.; Willd. sp.* 5. *p.* 258; *Pursh, fl.* 2. *p.* 662 ; *Hook. Brit. fl.* (*ed.* 4.) 1. *p.* 384, & *fl. Bor.-Am.* 2. *p.* 261 ; *Tuckerm. in Sill. jour.* 45. *p.* 46.

Stipe 2 - 6 inches long, thickly clothed, as is also the rachis, with long chaffy lanceolate-subulate scales. Frond 1½ – 2 feet long and 4 – 6 inches wide, of a somewhat rigid texture, broadly lanceolate in the outline ; the pinnæ lanceolate ; the lower ones gradually diminishing in size : pinnules or segments 6 – 8 lines long, sparingly chaffy-pilose underneath ; the teeth ending in a short bristle. Sori rather large, 6 – 8 on each pinnule, near the middle. Involucre reniform-peltate.

Mountains of Essex county (*Dr. W. F. Macrae*). I was not so fortunate as to find this interesting fern when I explored the Essex mountains ; neither was it detected by Dr. Knieskern, in his subsequent visit to that region. My specimens are from the Green Mountains of Vermont (where the plant was first found in N. America, by Pursh), and the White Mountains of New Hampshire ; the former kindly communicated by *Dr. W. F. Macrae*, the latter by *Mr. Tuckerman:* both presenting an exact resemblance to the European *A. aculeatum*.

13. ONOCLEA. *Linn.; J. Smith, l. c. no.* 82. *SENSITIVE FERN.*

[An ancient name of a Borragineous plant, applied, without evident reason, to this genus]

RAGIOPTERIS, *Presl.*

Fertile frond bipinnate ; the pinnules contracted ; the segments incurved and berry-like, constituting a general involucre. Sori round, 4 – 6, confluent. Proper involucre lateral, cucullate, thin and membranaceous. Sterile fronds deeply pinnatifid ; the segments sinuous or pinnatifid, with reticulated veins. Fertile fronds small ; the pinnules much contracted, forming an unilateral raceme of globose segments, which are filled with the capsules of the confluent sori.

1. ONOCLEA SENSIBILIS, *Linn.* (Plate CLX. var. *obtusilobata.*) *Sensitive Fern.*

Linn. sp. 2. *p.* 1062; *Willd. sp.* 5. *p.* 287; *Michx. fl.* 2. *p.* 272; "*Schk. Fil. t.* 102;" *Pursh, fl.* 2. *p.* 665; *Bigel. fl. Bost. p.* 391; *Torr. compend. p.* 384; *Beck, bot. p.* 448; *Darlingt. fl. Cest. p.* 576.

var. *obtusilobata*: fertile fern deeply bipinnatifid; segments obovate, very obtuse; the margin slightly recurved. O. obtusilobata, *Schk. Fil. t.* 103?; *Pursh, l.* c.

Stipe 8 – 12 inches long, somewhat angular, smooth except towards the base, where it is a little chaffy. Sterile frond deeply pinnate, 8 – 12 inches long, triangular in the outline, thin and delicate: segments an inch or more in breadth, obscurely serrulate on the margin; the lower ones toothed or often pinnatifid, and distinct at the base: veins beautifully anastomosing, forming oblong areolæ. Fertile frond 3 – 6 inches long, bipinnate; the pinnæ 1 – 2 inches long, and consisting of numerous triangular-globose distinct segments, which are dark brown when ripe. In the variety *obtusilobata*, the frond is smaller, the segments of the pinnæ obovate, and the border only partially recurved or cucullate, so that they retain their foliaceous character, and the sori are scarcely concealed; thus exhibiting an intermediate form between the barren and fertile fronds.

Moist woods and thickets: common. *Fr.* July. The plant (which I once regarded as a distinct species, but now consider an undoubted variety of *O. sensibilis*), is extremely rare, and has hitherto been obtained in only three localities. It was first detected, many years ago, by Dr. Jed. Smith, in Salem, Washington county; and my drawing and engraving were made from injured and imperfect specimens collected by him, before I knew the plant to be a variety of the common species. Afterwards I saw it in the herbarium of Dr. Bigelow, who collected it near Boston; and lately it was found by Dr. Sartwell, in Yates county. Although it is so different from the ordinary appearance of *O. sensibilis*, it is certainly a form of that species; for Dr. Sartwell found them growing together, and, in one instance at least, both grew on the same root. Whether it is identical with the *O. obtusilobata* of Schkuhr, is uncertain; for Dr. Gray could not find the plant in that botantst's herbarium, nor in any other European collection that he examined. RAGIOPTERIS of Presl seems to have been founded on the fertile frond of ONOCLEA, and the sterile frond of some other fern.

14. WOODSIA. *R. Br. in Linn. trans.* 11. *p.* 173; *Hook. gen. Fil. t.* 119, *and sp. Fil. p.* 59. *WOODSIA.*

[Named in compliment to JOSEPH WOODS, an English botanist.]

Sori globose. Involucre more or less globose or cup-shaped, seated under the sorus and sometimes completely enclosing it when young, finally bursting at the top; the margin irregularly lobed, or fringed with capillary segments. Capsules globose, on short stalks. — Small cespitose ferns, with pinnated fronds. Veins forked; the veinlets simple.

* WOODSIA proper. *Involucre minute, concave, covered by the capsules; the margin fringed with long hairs.*

1. WOODSIA ILVENSIS, *R. Br.* *Rusty Rock Polypody.*

Frond broadly lanceolate, pinnate; the pinnæ oblong, obtuse, broader at the base, deeply pinnatifid, with oblong obscurely crenate segments; the under surface, as well as the rachis and stipe, clothed with rufous chaffy scales. — *R. Br. l. c.; Pursh, fl. 2. p.* 660; *Bigel. fl. Bost. p.* 389; *Torr. compend. p.* 381; *Beck, bot. p.* 451; *Darlingt. fl. Cest. p.* 579; *Hook. in Engl. bot. suppl. t.* 2616, *and sp. Fil. p.* 63. W. rufidula, *Beck, l. c.* Acrostichum Ilvense, *Linn. sp. 2. p.* 1528. Polypodium Ilvense, *Swartz.* Nephrodium rufidulum, *Michx. fl. 2. p.* 269. Aspidium rufidulum, *Willd. sp. 5. p.* 282; *Pursh, l. c.*

Fronds 2 – 4 inches long and about an inch wide, growing in tufts, somewhat coriaceous, slightly hairy above; the under surface somewhat thickly clothed with rusty scales. Stipe 1 – 3 inches long. Sori small, distinct when young, but at length somewhat confluent, and partly concealed by the chaffy scales, situated near the margin of the segments. Involucre very small; the margin cut into numerous capillary segments. Capsules slightly pedicellate.

Crevices of rocks, particularly along the banks of rivers. *Fr.* June. This fern is a native also of the northern part of Europe.

** HYPOPELTIS, Torr. *Involucre hemispherical or globose when young, open at the top, with an irregular lobed margin.*

2. WOODSIA OBTUSA, *Torr.* *Woodsia.*

Frond broadly lanceolate, somewhat bipinnate, minutely and glandularly pilose; divisions rather distant, pinnate or deeply pinnatifid; the segments oblong, obtuse, crenate-dentate; sori mostly solitary on each lobule of the segments, and near the sinus; stipe and rachis a little chaffy. — *Torr. cat. pl. in geol. report of New-York,* 1840; *Hook. sp. Fil. p.* 62. W. Perriniana, *Hook. & Grev. ic. Fil. 1. t.* 68; *Beck, bot. p.* 452; *Darlingt. fl. Cest. p.* 580. Aspidium obtusum, *Willd. sp. 5. p.* 254; *Pursh, fl. 2. p.* 662. Hypopeltis obtusa, *Torr. compend. p.* 380. Physematium Perrinianum, *Kunze.* P. obtusum, *Hook. fl. Bor.-Am. 2. p.* 259. Alsophila Perriniana, *Spreng.*

Fronds 6 – 12 inches high, sprinkled with a short glandular pubescence; the divisions ovate-oblong, about an inch in length: segments or pinnules 3 – 4 lines long. Stipe and rachis somewhat chaffy. Sori small, distinct when young, finally approximated but not confluent. Involucre at first almost enclosing the sori, roundish, at length spreading, larger than the sori.

Rocky woods, banks of rivers: frequent. *Fr.* July. The *Alsophila Perriniana* of Spreng. is certainly our *Woodsia obtusa*. It was described by Sprengel from specimens which I sent to him many years ago, placed by mistake in a collection of plants brought from the West Indies by M. Perrin.

15. CYSTOPTERIS. *Bernh.*; *J. Smith, l. c. no.* 91. *BLADDER-FERN.*

[From the Greek, *kyste*, a little box, and *pteris*, a fern.]

ASPIDIUM, *Willd.*

Sori roundish. Involucre inserted by its broad cucullate base, opening by a broad free extremity which points towards the apex of the segment (*Hook.*). — Small ferns, with bi-tripinnate fronds of a thin and delicate texture. Veins forked; the venules free.

1. CYSTOPTERIS FRAGILIS, *Bernh.* *Brittle Bladder-fern.*

Frond bipinnate; pinnæ ovate-lanceolate; pinnules ovate-lanceolate, deeply pinnatifid; segments toothed; rachis winged. — *Hook. fl. Bor.-Am.* 2. *p.* 260. Polypodium fragile, *Linn. sp.* 2. *p.* 1091. Aspidium fragile, *Swartz; Willd. sp.* 5. *p.* 280; *Beck, bot. p.* 450. A. tenue, *Willd. l. c.; Pursh, fl.* 2. *p.* 665; *Torr. compend. p.* 382. Nephrodium tenue, *Michx. fl.* 2. *p.* 269. Cyathea fragilis, *Smith, Engl. bot. t.* 1587.

A very slender fern, 8 – 12 inches high, smooth, erect. Outline of the frond oblong-lanceolate; the rachis narrowly winged: segments 3 – 5 lines long, about 5-toothed on each margin: teeth rather obtuse, often obscure. Sori mostly solitary at the base of each tooth. Involucre inserted by its broad base at the inside of the sorus, and forming a sort of cup or hood.

Crevices of moist rocks: not common. *Fr.* June – July. The North American plant scarcely differs from the European *C. fragilis*.

2. CYSTOPTERIS BULBIFERA, *Bernh.* *Bulb-bearing Bladder-fern.*

Frond bipinnate, lanceolate, the upper part attenuated; segments oblong, obtuse, serrate, the lower ones pinnatifid; rachis bulbiferous. — *Hook fl. Bor.-Am.* 2. *p.* 260. Polypodium bulbiferum, *Linn. sp.* 2. *p.* 1091. Aspidium bulbiferum, *Swartz; Schk. Fil. t.* 57, ex *Willd. sp.* 5. *p.* 275; *Torr. compend. p.* 382; *Beck, bot. p.* 451. Nephrodium bulbiferum, *Michx. fl.* 2. *p.* 268.

Frond 1½ – 2 feet long, slender and graceful, smooth, usually much elongated, and often incurved or flexuous above; the rachis, and sometimes the rachillæ, bearing greenish fleshy ovate compressed bulbs, which are the size of a peppercorn or larger. Pinnæ numerous, opposite or alternate: segments 3 – 5 lines long, rather acutely serrated. Sori very small, solitary, situated near the base of the teeth. Indusium exactly as in the preceding species.

Shady rocky places: frequent. *Fr.* July. There can be no doubt of this species being a congener of *C. fragilis*. The bulbs are sometimes wanting. It is easily known by its very long narrow and tapering frond.

***** DICKSONIÆ, J. Sm. *Sori marginal, globose or oblong, furnished with a special involucre which is attached to the inner side, and is combined more or less with the altered margin of the frond, thus becoming urceolate or 2-lipped.*

16. DICKSONIA. *L'Herit.; Hook. gen. Fil. t.* 61. *DICKSONIA.*

[In honor of JAMES DICKSON, an English cryptogamic botanist.]

SITOLOBIUM, *Desv.*; PATANIA, *Presl.*

Sori small and roundish, situated at the margin of the frond, and arising from the apex of a vein. Involucre coriaceous or membranaceous, formed in part of the lobule of the frond and of the proper involucre more or less united, 2-valved or entire, sometimes cup-shaped. Receptacle elevated, globose. Frond usually much divided; the veins pinnated, simple or forked: veinlets free.

1. DICKSONIA PILOSIUSCULA, *Willd.* *Hairy Dicksonia.*

Frond bipinnate; pinnæ lanceolate, rather obtuse, deeply pinnatifid; segments incised-toothed; sori minute, one in the sinus of each segment; involucre cup-shaped; rachis and stipe glandularly pubescent. — *Willd. sp.* 5. *p.* 484; *Pursh, fl.* 2. *p.* 671; *Bigel. fl. Bost. p.* 395; *Beck, bot. p.* 456; *Darlingt. fl. Cest. p.* 584; *Hook. fl. Bor.-Am.* 2. *p.* 264. D. punctilobula, *Hook. sp. Fil. p.* 79. D. pubescens, "*Schk. Fil. t.* 13." Nephrodium punctilobulum, *Michx. fl.* 2. *p.* 268. Aspidium punctilobum, *Willd. l. c.; Pursh, l. c.* A. punctilobulum, *Torr. compend. p.* 382. Sitolobium pilosiusculum, *Desv.; J. Smith, l. c.*

Frond 15 – 20 inches high, ovate-lanceolate, acuminate, somewhat hairy, of a pale green color, but yellowish when dry; the lower pinnæ 3 – 4 inches long and an inch in width: segments 6 – 8 lines long. Stipe and rachis sparingly clothed with short somewhat glandular hairs. Sori minute, one (rarely two) on the upper margin of each lobe of the segments, at the lowest tooth.

Moist shady places: common. *Fr.* July. This is the only species of DICKSONIA inhabiting temperate climates. The outer half of the cup-shaped involucre is formed of the inflexed margin of the frond. It is of a firmer texture than the inner portion, which, indeed, is the true involucre, and with which the marginal portion is confluent.

SUBORDER II. OSMUNDEÆ. *Martius.* THE FLOWERING-FERN TRIBE.

Capsules destitute of a ring, reticulated, pellucid, striated with rays at the apex, bursting lengthwise on one side. — Rhizoma creeping or short. Fronds mostly pinnated.

17. OSMUNDA. *Linn.; Endl. gen. no.* 665. *FLOWERING-FERN.*

[Etymology obscure.]

Capsules minute, subglobose, clustered on the contracted fronds or in terminal paniculate racemes, pedicellate, radiate-striate, half 2-valved. Involucre none.— Tall handsome ferns; the sterile and fertile fronds sometimes distinct, pinnate or bipinnate. Veins forked, straight, not connected. Spores green.

1. OSMUNDA CLAYTONIANA, *Linn.* *Interrupted Flowering-fern.*

Frond pinnate; pinnæ pinnatifid; the segments oblong, entire; some of the intermediate pinnæ fertile. — *Linn. sp.* 2. *p.* 1066; *Willd. sp.* 5. *p.* 96; *Pursh, fl.* 2. *p.* 568; *Muhl. cat. p.* 102. O. interrupta, *Michx. fl.* 2. *p.* 273; *Pursh, l. c.; Bigel. fl. Bost. p.* 388; *Torr. compend. p.* 386; *Beck, bot. p.* 457; *Darlingt. fl. Cest. p.* 585.

Stipe nearly smooth, a little woolly at the base, 6 – 8 inches long. Frond $1\frac{1}{2}$ – 2 feet long, linear-oblong in the outline: pinnæ mostly opposite, sometimes alternate, nearly sessile, deeply pinnatifid, smooth above, a little ferruginous-pubescent underneath: veins very conspicuous, forking once near the base, and then running undivided obliquely quite to the margin. Several of the intermediate pinnæ on each side (usually near the middle) are metamorphosed into compound pinnate dense clusters of capsules of a dark brown color.

Low moist grounds and thickets: common. *Fr.* June – July.

2. OSMUNDA CINNAMOMEA, *Linn.* *Woolly Flowering-fern.*

Sterile frond pinnate, the pinnæ elongated and pinnatifid; segments entire; fertile frond bipinnate, the pinnæ contracted, and with the stipe woolly. — *Linn. sp.* 2. *p.* 1066; *Michx. fl.* 2. *p.* 273; *Willd. sp.* 5. *p.* 98; *Pursh, fl.* 2. *p.* 657; *Bigel. fl. Bost. p.* 387; *Torr. compend. p.* 385; *Beck, bot. p.* 457; *Darlingt. fl. Cest. p.* 586.

var. *frondosa:* frond leafy below, fructiferous at the summit; stipe less woolly. — *Torr. & Gr. in cat. pl. N.-York, in geol. rep.* 1841, *p.* 196. O. Claytoniana, *Conrad, in jour. acad. Phil.* 6. *p.* 39; *Beck, bot. l. c.*, not of *Linn.*

A tall fern, growing in large bunches, sometimes attaining a height of five feet; the sterile and fertile fronds intermixed. Stipe and rachis clothed with a loose copious reddish wool. Pinnæ 3 – 6 inches long, opposite or alternate, smoothish on both sides; the margin a little woolly: segments oblong, mostly obtuse. Fertile fronds with the pinnæ much smaller, erect, usually all of them changed into dense clusters of innumerable capsules of a bright ferruginous or cinnamon color when mature. In the var. *frondosa*, the frond is leafy below and fructiferous at the top.

Low grounds and wet thickets: common. The variety occurs near New-York, and has also been found near Cambridge, in Washington county, by *Dr. M. Stevenson*, as well as at Stillwater, by *Dr. Fitch*. *Fr.* June.

3. OSMUNDA SPECTABILIS, *Linn.* *Flowering-fern.*

Frond bipinnate, fertile at the summit; pinnules lanceolate-oblong, rather obtuse, nearly equal at the base, slightly petiolate, serrulate; raceme large, decompound, smooth. — *Willd. sp.* 5. *p.* 98; *Pursh, fl.* 2. *p.* 568; *Beck, bot. p.* 457; *Darlingt. fl. Cest. p.* 585; *Hook. fl. Bor.-Am.* 2. *p.* 265. O. regalis, β., *Linn. sp.* 2. *p.* 1065. O. regalis, *Michx. fl.* 2. *p.* 273; *Bigel. fl. Bost. p.* 388; *Torr. compend. p.* 386.

Whole plant smooth, 3 – 4 feet high, branching, grayish green; the divisions mostly opposite. Pinnules 1 – 2 inches long and 3 – 6 lines wide, alternate or opposite, distant, obtusely serrulate; the veins twice forked, once at the very base and then again unequally. Raceme or rather panicle 4 – 8 inches long, ferruginous when old; the ultimate segments (pinnules) linear, distant, bearing the clusters of capsules on little tooth-like processes.

Wet meadows and thickets: frequent. *Fr.* July. Differs from the European *O. regalis* (which it greatly resembles), in the nearly equal bases of the pinnules, and also in wanting the auricle on their lower side.

18. LYGODIUM. *Swartz, syn. Fil. p.* 154. *CLIMBING-FERN.*

[From the Greek, *lygos*, a band; in allusion to its twining habit.]

HYDROGLOSSUM, *Willd.*

Capsules in 2-ranked little spikes, which are produced on the margin of the more or less metamorphosed frond, sessile, ovate, radiately striate or wrinkled, opening on the inner side. Involucre scale-like, covering each capsule. — Climbing ferns; the fronds mostly in pairs, palmate, lobed or pinnate. Veins radiating from the base, forked, free.

1. LYGODIUM PALMATUM, *Swartz.* (Plate CLXI.) *Climbing-fern.*

Stems flexuous and twining; fronds conjugate, cordate, palmately 5 – 7-lobed, with the lobes entire and mostly obtuse; terminal ones contracted and fructiferous, forming a compound panicle. — *Swartz, l. c.; Bigel. fl. Bost. p.* 387; *Bart. fl. N. Am.* 3. *t.* 88. *f.* 1; *Torr. compend. p.* 386; *Beck, bot. p.* 457. Cteisium paniculatum, *Michx. fl.* 2. *p.* 275. Hydroglossum palmatum, *Willd. sp.* 5. *p.* 84; *Pursh, fl.* 2. *p.* 656.

A very delicate fern; the stem almost filiform, 1 – 2 feet or more in length, twining and tortuous, very smooth. Fronds or pinnæ petiolate, their petiolioles united near the base, roundish in the circumscription, 1 – 2 inches in diameter, deeply lobed, light green above, paler underneath; the primary veins diverging from the base, and then repeatedly forked. Several of the uppermost pairs of fronds or leaflets are reduced in size, and deeply divided into narrow segments, with the fruit in two imbricated rows on the back. These lobes, forming little spikes, bear 7 – 9 ovate slightly stalked capsules, which arise from the veins.

Capsules ovate, gibbous on the outside, opening longitudinally on one side, and then 2 valved.* Involucre membranaceous, attached to the vein on the lower edge ; the upper edge free.

Western part of the State? I inserted this plant in my catalogue, which was printed in the Geological Report of New-York for 1840, under the impression that it had been found within our limits. It appears, however, that the specimens to which I alluded, were collected in the northern part of Pennsylvania, near the New-York line. It grows near the Raritan river, below New-Brunswick, in New-Jersey, and will doubtless be found in our own State.

SUBORDER III. OPHIOGLOSSEÆ. *R. Br.* THE ADDER'S-TONGUE TRIBE.

Capsules roundish, one-celled, adnate at the base, coriaceous and opaque, without a ring, sometimes connate, half 2-valved. — Rhizoma creeping or short, not scaly : roots often fleshy and fasciculate. Fronds entire or divided, with the veins reticulated or free. Fructification in simple or compound spikes. Vernation straight.

19. OPHIOGLOSSUM. *Linn.; Endl. gen. no.* 671. *ADDER'S-TONGUE.*

[From the Greek, *ophis*, a serpent, and *glossa*, a tongue ; from the appearance of the spike]

Capsules roundish, smooth, naked, opening transversely, disposed in a 2-ranked, simple, linear spike. Involucre none. — Frond entire, with reticulated veins. Spike pedunculate.

1. OPHIOGLOSSUM VULGATUM, *Linn.* *Common Adder's-tongue.*

Frond oblong or ovate, obtuse ; spike cauline ; root fibrous. — *Linn. sp.* 2. *p.* 1062 ; *Engl. bot. t.* 108 ; *Michx. fl.* 2. *p.* 275 ; *Pursh, fl.* 2. *p.* 655 ; *Bart. fl. N. Am.* 2. *t.* 55. *f.* 2 ; *Torr. compend. p.* 386 ; *Beck, bot. p.* 458 ; *Darlingt. fl. Cest. p.* 586.

Root consisting of a tuft of thick fleshy fibres. Stipe smooth and succulent, 6 – 10 inches long, bearing about the middle the single sessile frond. This is from 1 – 3 inches long, varying from broadly ovate to ovate-oblong. Spike about an inch long, compressed, appearing articulated, bearing along each margin a row of small capsules, which are cohering, and finally open transversely by two valves.

Low moist woods and meadows : rare. *Fr.* June. Our plant is altogether like the European. A dwarf state of this species has been found on a dry hill at Exeter, Otsego county, in which the whole plant is not more than one or two inches high ; but my specimens, which were received from Dr. Gray, are not mature. The spike and its peduncle are shorter than the ovate-oblong or oblong-lanceolate frond. This is the plant alluded to by Dr. Beck (*bot. p.* 458), as, perhaps, a new species of OPHIOGLOSSUM.

* In our figure, an irregular transverse dehiscence is represented, instead of the regular one, which is longitudinal.

20. BOTRYCHIUM. *Swartz, Fil. p.* 171 ; *Endl. gen. no.* 674. *MOON-WORT.*

[From the Greek, *botrys*, a bunch of grapes ; the fructification having somewhat that form.]

BOTRYPUS, *Michx.*

Capsules somewhat globose, sessile, smooth, distinct, clustered on a compound pinnated rachis. Involucre none.

1. BOTRYCHIUM VIRGINICUM, *Swartz.* *Rattlesnake Fern.*

Somewhat hairy ; stipe or scape bearing the frond about the middle ; frond 3-parted, thin, the divisions bipinnatifid ; segments oblong, incisely toothed ; spike bipinnate. — *Swartz, l. c.; "Schk. Fil. t.* 156" ; *Pursh, fl.* 2. *p.* 656 ; *Bigel. fl. Bost. p.* 387 ; *Torr. compend. p.* 387 ; *Beck, bot. p.* 459 ; *Darlingt. fl. Cest. p.* 587. B. gracile, *Pursh, l. c.* Osmunda Virginica, *Linn. sp.* 2. *p.* 1064. Botrypus Virginicus, *Michx. fl.* 2. *p.* 274.

Plant more or less hairy, sometimes nearly smooth, 10 – 15 (or sometimes even 18) inches high. Frond from above the middle of the stipe ; the divisions broadly deltoid in the outline, deeply bipinnatifid ; the lateral ones rather smaller : segments acutely 2 – 6-toothed. Spike oblong, loose, of a tawny brown color ; the pinnules bearing the sessile capsules on the teeth of the margin.

Fertile woods : frequent. *Fr.* May – July. Pursh's *B. gracile* is certainly nothing more than a smooth form of this species. Sometimes (in very large specimens) the stipe or peduncle is forked, with a spike on each division.

2. BOTRYCHIUM LUNARIOIDES, *Swartz.* *Tall Smooth Moonwort.*

Scape bearing the petioled frond near the base ; frond 3-parted, the divisions bipinnatifid ; segments ovate, crenulate or lunate ; spike bipinnate. — *Swartz, Fil. p.* 172. B. fumarioides, *Willd. sp.* 5. *p.* 63 ; *Pursh, fl.* 2. *p.* 655 ; *Bigel. fl. Bost. p.* 386 ; *Torr. compend. p.* 387 ; *Beck, bot. p.* 459 ; *Darlingt. fl. Cest. p.* 587. B. obliquum, *Willd. l. c.* B. fumarioides, *var.* obliquum, *Torr. l. c.* Botrypus lunarioides, *Michx. fl.* 2. *p.* 274.

var. *dissectum :* divisions of the frond deeply tripinnately dissected ; the segments narrow, 2 – 3-toothed or bifid. — *Oakes, cat. pl. Vermont.* B. dissectum, *Muhl. in Willd. sp. l. c.; Pursh, l. c.; Beck, l. c.; Darlingt. l. c.*

Root a fascicle of thick fleshy fibres. Scape smooth or slightly hairy, 6 – 15 inches long, bearing near its base the stalk of the frond, which is from 1 – 6 inches long. Frond broadly triangular in the outline, smooth or with a few scattered hairs, rather thick and fleshy ; the divisions petioled : pinnæ cordate and oblique at the base, cut into rather obtuse crenulate lobes or segments. In the *var.*, the pinnæ are deeply and finely dissected into short linear toothed segments. Spike bipinnate ; the capsules inserted on the margin of the pinnules, which are very narrow and without teeth.

Moist fertile woods and low grounds. *Fr.* July – September. The *B. dissectum* of authors is surely but a variety of *B. fumariodes*. The two plants grow together, and intermediate forms occur.

3. Botrychium simplex, *Hitchcock.* *Dwarf Moonwort.*

Frond from the lower part of the scape, oblong, irregularly 3 – 4-lobed or pinnatifid, with the segments roundish, obovate, cuneate, and entire or somewhat incised; spike pinnate. — *Hitchcock, in Sill. jour.* 6. *p.* 103; *Torr. compend. p.* 386; *Hook. & Grev. ic. Fil. t.* 82, *and fl. Bor.-Am.* 2. *p.* 265; *Beck, bot. p.* 458.

A small fern, rarely more than 4 – 5 inches high, and sometimes scarcely more than a single inch. Frond variable: in the smallest specimens, oblong or obovate, with 3 – 4 large teeth or lobes; in the larger specimens, regularly pinnatifid, with 5 – 7 segments, which are roundish-obovate and sometimes cut or toothed.

Dry fertile woods; Highlands of the Hudson (*Dr. Barratt*); Rensselaer county (*Dr. Wass*). *Fr.* June.

Order CXXVIII. LYCOPODIACEÆ. *DC.* The Club-moss Tribe.

Fructification axillary or spiked, usually consisting of capsules or antheridia, which are 1 – 3-celled, and filled with minute spores or granules; sometimes, also, of other capsules (oophoridia, *Spring*), which contain larger grains. — Stems herbaceous or sometimes woody, simple or branched, usually creeping or prostrate. Leaves small, undivided, often in several rows and imbricated.

1. LYCOPODIUM. *Linn.; Spring, in nouv. mém. de l'Acad. roy. Brux.* 1842.

CLUB-MOSS.

[From the Greek, *lykos*, a wolf, and *pous, podos*, a foot; from a supposed resemblance.]

Capsules all of one kind (antheridia), one-celled, reniform, somewhat didymous (sometimes transversely ovoid), opening transversely at the apex or rarely at the base. — Leaves in 8 – 16 (rarely 4) rows. Fructification axillary or in terminal bracteate spikes. Spores pale yellow, highly inflammable.

* SELAGO, Dill. *Capsules axillary, scattered.*

1. LYCOPODIUM SELAGO, *Linn.* *Fir Clubmoss.*

Leaves about 8-rowed, lanceolate, entire, awnless ; stems dichotomous, erect ; fruit axillary. — *Linn. sp.* 2. *p.* 1102 ; *Engl. bot. t.* 233 ; *Bigel. fl. Bost. p.* 386 ; *Torr. compend. p.* 389 ; *Hook. & Grev. in Hook. bot. misc.* 2. *p.* 363 ; *Beck, bot. p.* 462 ; *Hook. fl. Bor.-Am.* 2. *p.* 266.

Stems erect, fastigiate, dichotomously branched, rigid. Leaves 3 – 5 lines long, spreading, dark green and shining, rigid, similar in form on every part of the stem. Capsules partly concealed in the axils of the leaves, reniform, yellowish, opening horizontally by 2 valves. Sporules very minute.

Summit of Mount Marcy ; also on Whiteface Mountain (*Dr. Emmons* and *Prof. J. Hall*). *Fr.* July. This rare species has also been found on the White Hills of New Hampshire. In Europe it is quite common.

2. LYCOPODIUM LUCIDULUM, *Michx.* *Shining Clubmoss.*

Leaves in about 8 rows, linear-lanceolate, denticulate, acute, spreading or reflexed ; stem twice or thrice forked, the branches ascending ; fruit axillary. — *Michx. fl.* 2. *p.* 284 ; *Pursh, fl.* 2 *p.* 654 ; *Bigel. fl. Bost. p.* 386 ; *Torr. compend. p.* 389 ; *Hook. & Grev. l. c. p.* 365 ; *Beck, bot. p.* 461 ; *Darlingt. fl. Cest. p.* 590. L. reflexum, " *Schk. Fil. t.* 159" ; *Swartz, syn. p.* 175.

Stem prostrate ; the forked branches erect, 6 – 12 inches high. Leaves 4 – 5 lines long, dark green and shining, rigid. Capsules semiorbicular-reniform, compressed from above downward, sessile in the axils of the leaves, pale yellow.

Moist shady woods and in swamps : rather common. *Fr.* July – August. This species is peculiar to North America.

** LEPIDOTIS, Beauv. *Capsules collected in bracteate spikes or aments.*

† *Leaves of one kind, surrounding the stem on all sides.*

3. LYCOPODIUM INUNDATUM, *Linn.* *Low Marsh Clubmoss.*

Stem prostrate, creeping ; fertile branches solitary, erect, with a single oblong sessile and leafy spike at the apex ; leaves linear, scattered, acute, sparingly denticulate or entire ; capsules transversely ovoid, opening near the base. — *Linn. sp.* 2. *p.* 1102 ; *Engl. bot. t.* 239 ; *Michx. fl.* 2. *p.* 283 ; *Pursh, fl.* 2. *p.* 653 ; *Torr. compend. p.* 388 ; *Hook. & Grev. enum. Fil. l. c. p.* 372 ; *Beck, bot. p.* 461 ; *Tuckerm. in Sill. jour.* 45. *p.* 47. L. Carolinianum, *Bigel. fl. Bost. p.* 384.

var. *alopecuroides :* fertile branches elongated ; leaves linear-subulate, ciliolate-denticulate at the base. — *Tuckerm. l. c.* L. alopecuroides, *Linn. sp.* 2. *p.* 1002 ; *Michx. l. c.* ; " *Schk. Fil. t.* 160" ; *Pursh, l. c.* ; *Torr. compend. l. c.* ; *Hook. & Grev. l. c.* ; *Beck, l. c.* ; *Spring, in Mart. & Endl. fl. Brasil. fasc.* 1. *p.* 114 ?

Whole plant pale yellowish green. Stem creeping close to the ground and adhering by numerous radicles, throwing up straight and somewhat rigid branches from 2 – 10 inches or more in height. Sterile branches short, flaccid. Leaves 3 – 5 lines long, varying from perfectly entire to strongly denticulate, soft : those of the stem, sterile branches and spike, spreading; those of the fertile branches more erect. Spikes from half an inch to more than an inch in length, squarrose with the long subulate leaves, which are dilated at the base. Capsules (antheridia) membranaceous, opening transversely at the base. Spores very minute, pale yellow, spherical.

Swamps and wet sandy margins of ponds : northern and western part of the State ; the *var.* on Long Island. *Fr.* August. After a careful comparison of *L. alopecuroides* with *L. inundatum*, I have adopted the opinion of Mr. Tuckerman, that the two plants are not specifically distinct. In both the leaves vary from entire to denticulate, and large specimens of the former are sometimes elongated.

4. LYCOPODIUM ANNOTINUM, *Linn.* *Interrupted Clubmoss.*

Stem long and creeping ; branches ascending and 2 – 3-forked, the divisions simple ; leaves in about 5 rows, linear-lanceolate, mucronate, serrulate, spreading ; spike oblong-cylindrical, sessile ; bracts broadly cordate, acuminate, somewhat squarrose. — *Linn. sp.* 2. *p.* 1103 ; *Michx. fl.* 2. *p.* 283 ; *Engl. bot. t.* 1727 ; *Pursh, fl.* 2. *p.* 653 ; *Torr. compend. p.* 388 ; *Beck, bot. p.* 460 ; *Hook. & Grev. l. c. p.* 370 ; *Tuckerm. l. c.*

Stem prostrate and creeping, often several feet in length, throwing off ascending branches, which are 4 – 8 inches high ; the sterile and fertile branches similar. Leaves rigid, light green : those of the stem shorter and distant ; those of the branches approximated, 3 – 5 lines long, remotely serrulate, with a sharp cartilaginous tip. Spike about an inch long ; the bracts closely imbricate, with slightly spreading tips, erosely denticulate, yellowish. Capsules reniform, sessile, opening by a transverse chink at the apex. Sporules spherical, smooth.

Woods and hill-sides, northern and western counties : frequent. *Fr.* July. Our plant agrees, in all respects, with the European *L. annotinum*.

5. LYCOPODIUM OBSCURUM, *Linn.* *Ground-pine.*

Stems erect, simple below, much branched above, the branches subdivided and more or less spreading ; leaves linear-lanceolate, in 4 – 6 unequal rows, the lateral rows spreading ; spikes 1 – 3, sessile. — *Linn. sp.* 2. *p.* 1102 ; *Bigel. fl. Bost. p.* 385 ; *Torr. cat. pl. in geol. report of N.-York*, 1841 ; *Oakes, cat. pl. Vermont.* L. dendroideum, *Michx. fl.* 2. *p.* 282 ; *Pursh, fl.* 2. *p.* 653 ; *Bigel. l. c. ; Hook. exot. fl. t.* 7 ; *Hook. & Grev. l. c. p.* 368 ; *Beck, bot. p.* 460 ; *Darlingt. fl. Cest. p.* 589

Stems arising from a horizontal subterranean caudex, 6 – 9 inches high ; the lower part clothed with appressed leaves, bushy above : branches 2 – 3 times forked, and crowded.

Leaves 2 – 3 lines long, entire, slightly curved; the lateral rows longest and spreading: those of the under side much shorter. Spikes often solitary, but sometimes as many as 4 or 5, about two inches long, tapering at the summit; the scales cordate-ovate, acute, at first appressed, finally loose. Capsules reniform, sessile. Sporules pale yellow, spherical.

Shady moist woods and thickets: not rare. *Fr.* July – August. The two forms of this species, described by most botanists, grow together, and pass into each other by insensible degrees, so that they cannot be regarded as even varieties.

6. LYCOPODIUM CLAVATUM, *Linn.* *Common Clubmoss.*

Stem creeping, terete, with ascending branches; leaves scattered, numerous, subulate-linear, entire or rarely denticulate, pointed with a bristle; spikes pedunculate, 2 – 3 together (sometimes solitary, rarely 4); scales ovate, acuminate, short, erosely denticulate. — *Linn. sp.* 2. *p.* 1101; *Engl. bot. t.* 224; *Michx. fl.* 2. *p.* 282; *Pursh, fl.* 2. *p.* 652; *Bigel. fl. Bost. p.* 384; *Torr. compend. p.* 387; *Hook. & Grev. l. c. p.* 375; *Beck, bot. p.* 460; *Darlingt. fl. Cest. p.* 588; *Hook. fl. Bor.-Am.* 2. *p.* 267; *Spring, l. c. p.* 114. L. tristachyum, *Pursh, l. c.?* L. integrifolium, *Hook. apud Goldie, in Edinb. phil. jour.*

Stem several feet long, terete, much branched, striking root at considerable intervals; the branches 2 – 5 inches long, often subdivided, very leafy. Leaves 3 – 4 lines long, light green, incurved or spreading; those of the branches mostly entire, those of the prostrate stem usually denticulate, all of them ending in a fine bristle. Peduncles 3 – 6 inches long, slender, sparsely clothed with slender somewhat appressed leaves. Spikes 1 – 2 inches long, mostly in pairs, erect; the scales somewhat membranaceous, at first closely appressed, finally open. Capsules reniform, opening from the apex to the base horizontally. Sporules spherical, pale yellow.

Dry woods: frequent in the interior of the State, but rare near New-York. *Fr.* July. A very widely diffused species, being found in many parts of the world. It is chiefly from this species that the spores are collected in great quanties and sold under the name of "Lycopodium powder," or "*Pulvis Lycopodii.*" This material is used by apothecaries, and is likewise employed for making artificial lightning in theatres.

†† *Branches flatly compressed.*

7. LYCOPODIUM COMPLANATUM, *Linn.* *Festoon Ground-pine.*

Stem trailing; branches erect or ascending, pedately subdivided, with the branchlets flattened and spreading; leaves in 4 rows, the marginal ones somewhat connate and a little spreading at the tip, the middle rows distinct and appressed; spikes 2 – 4 on a long common peduncle. — *Linn. sp.* 2. *p.* 1104; *Michx. fl.* 2. *p.* 283; *Pursh, fl.* 2. *p.* 652; *Bigel. fl. Bost. p.* 385; *Hook. & Grev. l. c.; Torr. compend. p.* 388; *Beck, bot. p.* 460; *Darlingt. fl. Cest. p.* 588; *Spring, l. c. p.* 116.

Stem 2 – 6 feet or more in length, slender, terete, sparingly clothed with subulate rigid leaves : branches 2 – 3 inches long; the summit divided into numerous spreading flat linear branches. Leaves 1 – 2 lines long, entire; the row along each margin broad at the base, acute and a little spreading at the tip, so that they give the branchlets a serrated appearance; those of the middle row on each side are narrower and closely appressed. Common peduncles 2 – 4 inches long, forked at the summit, and the branches commonly again divided. Spikes an inch or more in length, cylindrical; the scales broadly ovate, acute, nearly entire. Capsules reniform, sessile. Sporules pale yellow, spherical.

Dry woods and thickets : frequent. *Fl.* July. Widely diffused in Europe, Asia, and America.

2. SELAGINELLA. *Spring, in nouv. mém. de l'acad. roy. Brux.* 1842. SELAGINELLA.

[The name is a diminutive of *Selago.*]

Fructification of two kinds, viz. antheridia, which are one-celled, opening at the apex; and oophoridia, which contain 1 – 4 (rarely 6) globose-angular grains. — Habit various. Spikes quadrangular; the bracts in 4 rows.

1. SELAGINELLA RUPESTRIS, *Spring.* *Small Rock Clubmoss.*

Cespitose, with ascending stems; leaves all of one kind, crowded, imbricated, linear-lanceolate, ciliate, bearing a bristle at the tip, the keel sulcate; spikes sessile, distinct, acutely quadrangular. — *Spring, in Mart. & Endl. fl. Bras. fasc.* 1. *p.* 118. Lycopodium rupestre, *Linn. sp.* 2. *p.* 1101; *Michx. fl.* 2. *p.* 284; *Pursh, fl.* 2. *p.* 654; *Bigel. fl. Bost. p.* 385; *Torr. compend. p.* 389; *Hook. & Grev. l. c. p.* 373; *Beck, bot. p.* 461; *Darlingt. fl. Cest. p.* 589.

Plant of a grayish green color. Stems 1 – 3 inches long, branching and somewhat fastigiate. Leaves terminating in a whitish hair; the under surface marked with a furrow. Spikes 3 – 6 lines long, sessile, terminating the branches. Scales resembling the leaves. Fructification consisting mostly of oophoridia, which are subglobose, of an orange color, and contain from one to four roundish smooth grains. Antheridia intermixed with the oophoridia; the grains minute, and of a bright reddish color.

Dry rocky places : not rare. *Fr.* July – August. This species grows also in South America, Kamschatka, and India.

2. SELAGINELLA APUS, *Spring.* *Moss-like Selaginella.*

Cespitose; stems flaccid, creeping, flat; leaves in 4 rows, not auricled; those of the lateral rows roundish ovate, oblique and spreading; the intermediate ones on the upper side of the branches smaller, appressed; spikes dense, leafy; grains of the oophoridia reticulated, scabrous. — *Spring, l. c.* Lycopodium apodum, *Linn.; Michx. fl.* 2. *p.* 284; *Pursh, fl.*

2. *p.* 654; *Torr. compend. p.* 389; *Hook. & Grev. l. c. p.* 174; *Beck, bot. p.* 461; *Darlingt. fl. Cest. p.* 589. L. albidulum, *Hook. & Grev. l. c.* (in part); *Pursh, l. c.*

Annual? Stems numerous, moss-like, 1 – 4 inches long, with somewhat pinnated flattened branches, throwing down rooting fibres from the forks on the underside. Leaves scarcely more than a line long, pale green, minutely denticulate as seen under a lens, membranaceous, rather obtuse or somewhat acute; those of the lateral rows spreading horizontally, a little clasping: intermediate ones ovate, acuminate. Spikes terminating the branches, sessile, 2 – 4 lines long: bracts resembling the leaves, except that the upper ones are smaller and more acute. Oophoridia chiefly occupying the lower part of the spike, tumid, conspicuous: grains 3 – 4, roundish, yellowish white, opening by 2 nearly equal valves; the surface marked with minute reticulated wrinkles. Antheridia much smaller, oval, erect, filled with saffron-colored sporidia or dust.

Moist shady woods: frequent. *Fr.* July – August. Resembles *S. Helvetica* of Europe; but in that species the spikes are elongated, and the fructiferous scales small and rather distant.

ORDER CXXIX. SALVINIACEÆ. *Bartl.* THE SALVINIA TRIBE.

Fructification of two kinds on the same plant, situated at the base of the leaves or on leafless submerged branches. Involucres globose, closed, without valves or opening transversely: one kind filled with numerous or solitary angular or globose bodies (antheridia?), 1 – 2-celled; the other one-celled, including pedicellate saccules or capsules, which contain spores or grains. — Stems swimming and rooting. Leaves alternate, sessile, entire, imbricated, papillose or with fascicled short bristles above.

1. SALVINIA. *Micheli; Bisch. in nov. act. nat. cur.* 14. *p.* 45. *t.* 4, 5. *SALVINIA.*

[In honor of SALVINI, an Italian professor.]

Antheridia? spherical, attached to a pencillate central receptacle. Capsules or saccules several, subglobose, attached to the summit of a clavate pedicel. — Very small aquatic plants. Stem floating, filiform. Fructification glomerated on submerged leafless branches.

1. SALVINIA NATANS, *Willd.* *Floating Salvinia.*

Leaves elliptical, obtuse, somewhat cordate at the base, with fascicles of hairs above. — *Willd. sp.* 5. *p.* 541; *Pursh, fl.* 2. *p.* 672; *Beck, bot. p.* 462.

Floating like LEMNA, on the waters of small lakes in the western parts of New-York (*Pursh*). I have seen no North American specimens of this plant.

2. AZOLLA. *Lam. enc.* 1. *p.* 343; *R. Br. prodr. p.* 166. AZOLLA.

[Said to be from the Greek, *azo*, to dry, and *ollumi*, *ollo*, to destroy; being easily killed by dryness.]

Involucres ovoid, membranaceous, sessile on the underside of the branches; the sterile ones opening transversely all around, containing an oval somewhat fleshy body arising from the base, and bearing a short column which supports three anther-like lobes at the summit, which cohere with a kind of calyptra: fertile? involucres much larger, opening irregularly, filled with numerous pedicellate globular capsules, each containing about 5 roundish hairy grains or spores. — Minute floating plants, pinnately or radiately branched. Stems filiform. Leaves imbricated, alternate.

1. AZOLLA CAROLINIANA, *Willd.* *Carolina Azolla.*

Leaves ovate-oblong, obtuse, spreading, reddish underneath. — *Willd. sp.* 5. *p.* 541; *Pursh, fl.* 2. *p.* 672; *Torr. compend. p.* 390; *Beck, bot. p.* 463.

Whole plant only half an inch or an inch in length, resembling a JUNGERMANNIA, dark green tinged with purple, branching repeatedly in a pinnated or radiating manner. Leaves scarcely more than one-third of a line in length. Sterile involucres solitary or in pairs, at the base of the fertile ones; the upper part discolored, separating transversely, filled with a body which is by some supposed to perform the office of a stamen; the anther-like lobes bent down and applied to the short column. Fertile involucres 4 – 5 times larger than the sterile, containing 25 – 30 spherical capsules, the pedicels of which radiate from the base of the involucre. Spores or grains roundish, sparingly furnished with radiating hairs.

In slowly flowing waters, island of New-York; floating on the waters of Lake Ontario (*Pursh*); Braddock's Bay (*Dr. Bradley*). Sir William Hooker refers *A. microphylla* of Kaulfuss to this species, which he suspects is not distinct from the original *A. Magellanica*. In the United States it is widely diffused, but very rare north of Georgia.

Order CXXX. ISOETACEÆ. *Bartl.* The Quillwort Tribe.

Fructification adhering to the dilated bases of the leaves. Involucres membranaceous, not opening, one-celled : some of them containing large crustaceous roundish grains ; others a fine powder ; both attached to numerous transverse threads, which are arranged in rows, and divide the cavity of the involucre into several vertical cells. — Submersed herbs, with a very short stem, which throws down numerous fasciculate fibres. Leaves numerous, radical, subulate-linear. Nearly related to Lycopodiaceæ.

1. ISOETES. *Linn.; DC. organog.* 2. *p.* 140. *t.* 56, 57. *QUILLWORT.*

[From the Greek, *isos*, equal or similar, and *etos*, the year; an evergreen.]

Character that of the Order.

1. Isoetes lacustris, *Linn.* *Common Quillwort.*

Linn. sp. 2. *p.* 1100 ; *Willd. sp.* 5. *p.* 534 ; *Pursh, fl.* 2. *p.* 671 ; *Nutt. gen.* 2. *p.* 253 ; *Torr. compend. p.* 390 ; *Beck, bot. p.* 462 ; *Darlingt. fl. Cest. p.* 590.

Roots long and fibrous. Stem very short and succulent. Leaves or fronds 2 – 10 inches long, dilated and imbricate at the base. Involucres oval, membranaceous ; the posterior side adnate to the dilated base of the leaf, and the upper part somewhat covered with a leafy scale, which is broad and 2-lobed below, and acute above. The involucres of the exterior leaves are filled with 50 – 80 spherical bodies, which are whitish when ripe. The integument is crustaceous, muricate-reticulate externally, and polished within. At the base there are three prominent radiating lines, which meet another line encircling the globule. The nucleus is soft and oily. The involucres of the central leaves are divided into more numerous imperfect cells, filled with exceedingly minute grains, which are whitish at first, but at length dark colored ; these, when highly magnified, appear roundish oval and nearly smooth.

Bottom of ponds and slow-flowing streams ; Oswego river, near the falls (*Pursh*). The large granules of this plant have been observed by several botanists to separate at the prominent circular and radiating lines, into 4 pieces; but I have never seen them do so.

ADDITIONS.

Volume I., page 150; after Polygala cruciata, add:

2 (*a*). Polygala lutea, *Linn.* *Yellow Milkwort.*

Spike ovoid-oblong, dense; flowers distinctly pedicellate; wings ovate, abruptly acuminate; exterior sepals and crest minute; stem leaves oblong-lanceolate; radical ones obovate, narrowed at the base. — *Linn. sp.* (ed. 2.) 2. *p.* 990; *Pursh, fl.* 2. *p.* 465; *Nutt. gen.* 2. *p.* 88; *Ell. sk.* 2. *p.* 185; *DC. prodr.* 1. *p.* 328; *Torr. & Gr. fl. N.-Am.* 1. *p.* 127. P. lutea, *var.* elatior, *Michx. fl.* 2. *p.* 54.

Biennial. Stem 6 – 12 inches high, either simple or throwing off a few long spreading branches. Radical leaves in a spreading cluster, obtuse. Heads of flowers from half an inch to an inch and a half in length, obtuse, retaining their color when dry. Style elongated, slightly dilated in the middle, near which is a small pedicellate gland. Seed hairy: lobes of the caruncle collateral, nearly as long as the seed.

Sandy swamps; Raynor, Queens county, Long Island. *Fl.* June – October. A very showy plant when in flower.

Vol. I., p. 179; after Desmodium viridiflorum, add:

7 (*a*). Desmodium lævigatum, *DC.* *Rigid Upright Desmodium.*

Stem erect, stout, smooth or minutely pubescent; leaves on long petioles, rather thick and coriaceous; leaflets ovate-oblong, rather obtuse, pubescent on the veins underneath, the lateral ones narrower and somewhat distant; stipules subulate, caducous; racemes paniculate, roughly pubescent; bracts ovate, small; legumes of 2 – 4 broadly semi-rhomboidal hispidly pubescent joints, which are slightly convex on the back, with a stipe nearly the length of the lowest joint. — *DC. prodr.* 2. *p.* 329; *Torr. & Gr. fl.* 1. *p.* 361. D. rhombifolium, *DC. l. c.; Torr. & Gr. l. c.* Hedysarum lævigatum, *Nutt. gen.* 2. *p.* 109. H. rhombifolium, *Ell. sk.* 2. *p.* 216.

Stem 2 – 4 feet high, nearly simple, straight. Petioles 1 – 3 inches long. Leaflets about 2 inches long, of a firm texture. Panicle very large. Pedicels as long as the flowers. Joints of the legume about 3 lines long.

Dry rocky hills; near Kingsbridge, on the island of New-York. *Fl.* August – September. A rare species, which was first pointed out to me in the above locality, by my friend, Mr. *John Carey.*

VOL. I., p. 229; after LYTHRUM HYSSOPIFOLIA, add:

2. LYTHRUM SALICARIA, *Linn.* *Common Purple Loosestrife.*

Leaves lanceolate, cordate at the base; flowers nearly sessile, whorled, in a long spike; petals 6 – 7; stamens twice as many as the petals. — *Linn. sp.* (ed. 2.) 1. *p.* 640; *Engl. bot. t.* 1061; *DC. prodr.* 3. *p.* 82; *Hook. fl. Bor.-Am.* 1. *p.* 219; *Torr. & Gr. fl. N. Am.* 1. *p.* 482. L. Salicaria, β. pubescens, *Pursh, fl.* 1. *p.* 334.

Stems branching, 3 – 5 feet high, quadrangular, erect. Leaves 2 – 4 inches long, opposite, often a little pubescent on the veins, the upper ones reduced to bracts. Spikes terminal, 4 – 5 inches long; the flowers large and showy, mostly hexamerous. Calyx striate. Petals bright purple, oblong-cuneiform, twice the length of the calyx. Stamens included; the alternate ones longer. Style exserted. Capsule oblong, surrounded by the tube of the calyx. Seeds obovoid-oblong.

Borders of Murderer's Creek, Orange county, where it occurs in many places for several miles, and is apparently native (*Mr. M. B. Halsted*). *Fl.* June – July. Our plant is in every respect like the European *L. Salicaria.*

VOL. I., p. 255; after SAXIFRAGA PENNSYLVANICA, add:

3. SAXIFRAGA AIZOIDES, *Linn.* *Yellow Mountain Saxifrage.*

Stems cespitose, leafy; leaves linear, more or less ciliate, slightly mucronate, thick; flowers panicled or sometimes solitary; sepals ovate-oblong; petals oblong, yellow, a little exceeding the calyx; stigmas depressed; capsule thick, as long as the styles; seeds ovoid-triquetrous, minutely rugose. — *Linn. sp. pl.* (ed. 2.) 1. *p.* 576; *Engl. bot. t.* 39; *Seringe in DC. prodr.* 4. *p.* 47; *Hook. fl. Bor.-Am.* 1. *p.* 255; *Torr. & Gr. fl. N. Am.* 1. *p.* 565.

Stems numerous, 2 – 4 inches long, spreading. Leaves 4 – 6 lines long, crowded at the base, scattered above. Flowers few in a loose panicle. Pedicels 4 – 8 lines long. Calyx adherent to the base of the ovary; the sepals obtuse. Corolla yellow dotted with orange. Stamens 10: filaments and anthers yellow. Capsule roundish-ovoid, abruptly pointed with the persistent styles.

Wet rocks, Annsville, Oneida county, on the east branch of Fish creek (*Mr. Vasey* and *Dr. Knieskern*). *Fl.* June. This interesting little plant has been nowhere found in the United States except in the locality here given. In the northern parts of Canada, and in Arctic America, it is not uncommon.

VOL. I., p. 327; next to EUPATORIUM LEUCOLEPIS, add:

2 (*a*). EUPATORIUM HYSSOPIFOLIUM, *Linn.* *Hyssop-leaved Hempweed.*

Stem minutely pubescent, loosely croymbose at the summit; leaves linear, opposite or verticillate, and often fascicled in the axils, the uppermost alternate, minutely pubescent, dotted on both sides, 3-nerved; heads 5-flowered; scales of the involucre 10, linear-oblong, obtuse, shorter than the flowers, very pubescent, glandular; achenia naked, usually glandular. — *Linn. sp.* 2. *p.* 836; *Willd. sp.* 3. *p.* 1749; *DC. prodr.* 5. *p.* 177 (chiefly); *Torr. & Gr. fl.* 2. *p.* 84. E. linearifolium, *Walt. fl. Car. p.* 199; *Michx. fl.* 2. *p.* 84; *DC. l. c.*

About 2 feet high; the stem simple or branched, very leafy, erect and rigid. Leaves about 1½ inch long, and usually not more than 2 lines wide, of a thickish texture, rather obtuse; the lower ones somewhat lanceolate. Corymb often fastigiate; the heads numerous, small. Flowers white.

Dry sterile soils, Queens county, Long Island (*Mr. O. Willis*). *Fl.* August – September. A common species in the Southern States, and in New-Jersey.

2 (*b*). EUPATORIUM ALBUM, *Linn.* *White-headed Hempweed.*

Stem pubescent, corymbose at the summit; leaves opposite, sessile, broadly lanceolate, coarsely serrate-toothed, veiny, dotted, more or less pubescent; heads 5-flowered, glomerate; scales of the involucre 10 – 14, closely imbricated, narrowly lanceolate, acuminate, white and scarious above, mostly longer than the flowers, the exterior dotted with resinous globules when old; achenia glandular. — *Linn. mant. p.* 111; *Willd. sp.* 3. *p.* 1752; *Pursh, fl.* 2. *p.* 513; *Ell. sk.* 2. *p.* 296; *DC. prodr.* 5. *p.* 178; *Torr. & Gr. fl. N. Am.* 2. *p.* 86. E. glandulosum, *Michx. fl.* 2. *p.* 98.

Stem about 2 feet high, rather stout, erect, sometimes almost villous. Leaves varying from narrowly to broadly lanceolate, about 2 inches long, roughish, reticulately veined underneath. Involucre, corolla and achenia sprinkled with resinous globules when old. Flowers white. Style either exserted or included.

Sandy fields, Queens county, Long Island (*Mr. O. Willis*). *Fl.* August – September. This, also, is a common plant in the sandy pine districts of New Jersey.

VOL. I., p. 329; after EUPATORIUM SESSILIFOLIUM, add:

5 (*a*). EUPATORIUM RESINOSUM, *Torr.* *Resinous Hempweed.*

Stem minutely and softly pubescent, corymbose at the summit; leaves opposite, closely sessile or partly clasping at the base, linear-lanceolate, attenuated above, evenly serrate, one-nerved, pinnately veined, nearly smooth above, velvety-canescent underneath, dotted with resinous globules on both sides; heads glomerate, 9 – 15-flowered; scales of the involucre oblong, obtuse, tomentose-canescent and glandular; achenia minutely roughened with resinous dots. — *Torr. in DC. prodr.* 5. *p.* 176; *Torr. & Gr. fl. N. Am.* 2. *p.* 88.

Stems growing in tufts, 2 – 3 feet high, terete, slender. Leaves 3 – 5 inches long and 4 – 5 lines wide, thin, pale green, closely dotted with minute resinous globules. Corymb fastigiate, compound. Heads about one-third of an inch long. Flowers white. Style exserted.

Swamps, Queens county, Long Island (*Mr. O. Willis*). *Fl.* August – September. A rare species, which has not been found elsewhere, except in the pine barrens of New Jersey, and perhaps also in Pennsylvania.

VOL. I., p. 348; after ASTER NOVÆ-ANGLIÆ, add:

******** *Heads racemose; scales of the involucre rather rigid, silky; corolla of the disk and rays violet or purple; achenia silky villous; leaves small, closely sessile, oblong or lanceolate, entire, of the same color on both sides.*

ASTER CONCOLOR, *Linn.* *Racemed Violet Aster.*

Stem simple or sparingly branched, virgate; leaves crowded, oblong-lanceolate, mucronulate, minutely silky on both sides, or sometimes nearly smooth when old, the upper ones appressed; heads in a simple or compound virgate raceme; scales of the involucre lanceolate, acute, somewhat appressed; achenia silky villous. — *Linn. sp.* (ed. 2.) 2. *p.* 1228; *Michx. fl.* 2. *p.* 111; *Pursh, fl.* 2. *p.* 448; *Ell. sk.* 2. *p.* 350; *Nees, Ast. p.* 115; *DC. prodr.* 5. *p.* 243; *Torr. & Gr. fl. N. Am.* 2. *p.* 113.

Stems 2 – 3 feet high, erect or leaning to one side, often clustered, terminating in a long raceme. Leaves about an inch long, somewhat clasping, gradually diminishing in size upward. Heads on short bracteate peduncles, middle-sized; the rays of a rich bluish violet color. Pappus reddish.

Dry sandy soils, Queens county, Long Island (*Mr. O. Willis*). *Fl.* August – September. This is one of our most ornamental species of ASTER; detected for the first time north of New Jersey, by Mr. Willis.

VOL. II., p. 178; after EMPETRUM, add:

2. OAKESIA. *Tuckerm. in Hook. Loud. jour. bot. Aug.* 1842; *Hook. ic. t.* 531; *Endl. gen. suppl.* 3. *no.* 5760. 1. *OAKESIA.*

[In honor of WILLIAM OAKES, Esq., of Ipswich, Massachusetts, an able botanist, who has long and successfully studied the plants of New England.]

TUCKERMANIA, *Klotzsch*, not of *Nutt.* Sp. of EMPETRUM, *Torr.*

Mostly diœcious. STAM. FL. Perianth of 5 – 6 leaflets, the 2 innermost ones somewhat petaloid and often united on one side. Stamens mostly 3 (sometimes 4, rarely 5), exserted. Ovary wanting or mostly abortive. FERTILE FL. Perianth nearly as in the sterile flowers. Disk none. Ovary 3 – 4-celled: style filiform, 3 – 4-cleft; the segments subulate. Fruit dry and drupaceous, globose, minute. — A prostrate much branched evergreen shrub, with small somewhat verticillate linear leaves. Flowers sessile, inconspicuous, in small terminal bracteate heads.

1. Oakesia Conradi, *Tuckerm.* *Conrad's Oakesia.*

Tuckerm. l. c.; Hook. l. c. Empetrum Conradi, *Torr. in ann. lyc. N.-York.* 4. *p.* 83. Tuckermania Conradi, *Klotzsch in Erich. arch.* 1841. *p.* 248. Corema Conradi, *Torr. in Loud. enc. tr. & shrubs, p.* 1092.

An intricately branched shrub, forming dense circular patches; the branches somewhat verticillate and fasciculate, ascending at the extremity, invested with a loose grayish bark. Leaves coriaceous, narrowly linear, about 5 lines long and scarcely half a line wide, crowded particularly toward the summit of the branches, bright green, hispidulous when young, but nearly smooth when old, longitudinally grooved on the back; the true margin strongly revolute; the apparent margin minutely denticulate. Heads of flowers furnished with several small concave bracts. Leaflets of the perianth oblong or obovate, purplish brown; the inner ones slightly denticulate. Stamens twice or three times as long as the perianth: filaments slender, smooth: anthers roundish, 2-celled. Ovary obovate, smooth: style about three times as long as the ovary, purplish red, 3 – 4-cleft to the middle; the segments somewhat spreading, stigmatose on the inside. Fruit about the size of a mustard-seed, depressed-globose, crustaceous when dry, usually 3-celled, but sometimes 2 or 4-celled: each cell one-seeded.

Dry sandy woods, between Oyster-Bay and Hempstead, Long Island? (*Dr. Emmons*). *Fl.* April. *Fr.* July – August. Specimens of this plant were given to me by Dr. Emmons, who informed me that he collected them on Long Island, and, to the best of his recollection, on the road from Oyster-Bay to Hempstead, but possibly near Islip. For particulars respecting its history, see the Annals of the New-York Lyceum of Natural History, and Mr. Tuckerman's memoir, as quoted above. The genus is nearer Ceratiola or Corema, than Empetrum.

Vol. II., p. 267; after Tipularia, add:

5 (*a*). CALYPSO. *Salisb.* "*parad. Lond. t.* 89"; *R. Brown, in hort. Kew* (ed. 2.) 5. *p.* 208. *CALYPSO.*

[A poetical name. *Calypso* was the daughter of Oceanus and Tethys.]

Sepals and petals nearly equal, ascending. Lip ventricose, saccate toward the apex. Column dilated and petaloid. Pollen-masses 2, each 2-parted, sessile. — A small but handsome plant, growing in marshes, with a bulbous rhizoma. Leaf solitary, radical, petiolate. Scape 1-flowered, leafless, sheathed.

1. CALYPSO BOREALIS.

Salisb. l. c.; Hook. exot. fl. t. 12, *& in bot. mag. t.* 2763; *Pursh, fl. 2. p.* 593; *Hook. fl. Bor.-Am. 2. p.* 195. C. Americana, *R. Br. l. c.; Nutt. gen. 2. p.* 195. C. bulbosa, *Oakes in cat. Vermont pl. p.* 28. Cypripedium bulbosum, *Linn.*

Bulb fleshy, about the size of a small marble. Leaf an inch or more in length, roundish ovate, smooth, plicate : petiole about the length of the lamina. Scape 3 – 5 inches long, furnished with two or three leafless sheaths. Flower terminal, about an inch long, variegated yellow and purplish.

Sphagnous swamps and wet shady woods, near Brownville, Jefferson county (*Dr. W. A. Wood*); Lowville, Lewis county (*Mr. F. B. Hough*). This rare and singular plant has not been found elsewhere in the United States, except in Vermont, where it was detected several years ago by Mr. John Carey. It occurs in various parts of British America, and is also a native of Northern Europe, as well as of Asia.

VOL. II., p. 350; after ELEOCHARIS TENUIS, add :

ELEOCHARIS MELANOCARPA, *Torr.* *Black-fruited Eleocharis.*

Culm compressed, sulcate; spike oblong or cylindrical-oblong; scales ovate, obtuse, membranaceous; bristles 3 – 4, mostly as long as the nut, slender; achenium somewhat turbinate, obtusely triangular (blackish), smooth; style 3-cleft; tubercle broad, triangular, with a short acumination. — *Torr. Cyp. l. c. p.* 311.

Culms 12 – 18 inches high, tough, sulcate. Spike 4 – 6 lines long, thick, mostly obtuse, many-flowered. Scales light brown, with a scarious margin; the lowest ones broader and usually abortive. Bristles very slender, purplish, sometimes very short. Stamens 3. Style cleft about halfway down. Achenium half a line long, thick, brownish black and shining. Tubercle broad at the base; the margin thickened and projecting a little over the top of the nut; the centre produced into a short triangular point.

Borders of sandy swamps, Suffolk county, Long Island (*Dr. Knieskern*). The specimens collected by Dr. Knieskern were immature, but I think they belong to this species.

CORRECTIONS.

PREFACE.

Page viii., for "F. C. Schæffer," read G. C. Schæffer; for "Charles Benner," read Robert Benner; and for "R. J. Brownne," read R. H. Brownne.

VOL. I.

Page 8, line 21, for "*white*," read *red*.
69, line 13, after "*more or less*," add *recurved*.
72, line 3, add a comma after "margined."
89, line 25, for "gentianoides," read hypericoides.
139, line 22, erase "plate xix."
142, line 1, for "xx," read xix.
150, POLYGALA CRUCIATA, omit from the synonyms, "*P brevifolia*, Nutt.," and "*P. cuspidata*, Hook."
151, line 9, for "P AMBIGUA," read P. NUTTALLII, not of *Torr. & Gr. fl. N. Am. supp.* (which is *P. fastigiata*, Nutt.). Add after the specific character, *P. sanguinea*, Nutt., not of Linn. Omit all the references, except "*Torr. & Gr.*" *P. ambigua*, Nutt., is a slender species, near *P. verticillata*, but probably distinct.
156, last line but one, after "neighborhood," add of New-York.
161, line 13, for "C," read Glycine.
166, line 26, add 19. *p.* 170.
197, line 4, for "*fl.*" read *f.*
251, last line, add T. connata, *Ives in trans. phys.-med. soc. N.-York*, 1817.
306, line 22, for "reddish," read dark purple.
313, 3d line from bottom, for "*butter*," read *button*.
346, line 25, for "elodes," read paludosus.
385, line 10, after "membranaceous," add, Receptacle flat or somewhat convex, chaffy; the chaff membranaceous, mostly deciduous with the fruit.
394, line 20, for "preceding," read succeeding.
405, line 1, for "CARDUUS," read CNICUS.
443, line 11, for "*Schk.*," read *Schk.*
444, line 10, for "VACCILLANS," read VACILLANS.

VOL. II.

Page 4, line 22, for "lxxii.," read lxxiii.
8, line 15, for "*Lysimachos*," read *Lysimachus*; and for "*lucis*," read *lycis*.
15, line 28, for "heels," read keels.
44, "PÆDEROTA VIRGINICA." I followed Endlicher, and the hint of R. Brown (*in Prodr. p.* 434), in referring this plant to PÆDEROTA; but I now think Mr. Bentham properly retains it in VERONICA.
77, after line 4, add Borders of lakes and rivers; western counties. August – September.
140, line 5, for "Virginiaca," read Virginica.
144, line 26, for "New Jersey," read Long Island.
156, line 7, for "*Britannicas*," read *Britannica*.
218, line 2, omit "L. styraciflua," &c.
224, line 15, for "*culindrico*," read *lateriflora*.
278, line 7, for "physodes," read psycodes.
301, line 21, for "*umbellulata*," read *umbellata*.
340, line 25, for "Euslenii," read Enslenii.
372, line 28, for "long," read wide.
391, last line but one, for "cxliv," read cxlvii.
448, line 27, before "palea," insert lower.
448, 6th line from the bottom, after "one-third," insert the length.

LIST OF PLANTS NOT DESCRIBED IN THIS FLORA, BUT WHICH PROBABLY GROW IN THE STATE OF NEW-YORK.

It was stated in the preface, that further search would doubtless bring to light many plants not hitherto observed in New-York; and we have already described eleven additional species in the supplement. It will require many years thoroughly to explore so extensive a field as the whole State. In the following list, there is annexed to each species the name of the region in which it will probably be found. It will be seen that the largest accession may be expected from Long Island and the western counties; while the Hudson river and Northern regions give but little promise of yielding many additions to our Flora.

Delphinium tricorne, *Michx.*	Western District.
Isopyrum biternatum, *Torr. & Gr.*	" "
Meconopsis diphylla, *DC.*	" "
Ascyrum Crux-Andreæ, *Linn.*	Long Island.
Hypericum prolificum, *Linn.*	"
— angulosum, *Michx.*	"
Negundo aceroides, *Mœnch.*	Western District and Long Island.
Æsculus glabra, *Willd.*	Western District.
Desmodium humifusum, *Beck.*	" and Northern Districts.
Baptisia leucophœa, *Nutt.*	Western District.
— leucantha, *Torr. & Gr.*	" "
Darlingtonia brachyloba, *DC.*	" "
Spiræa Aruncus, *Linn.*	" "
[This species is said to have been found on the Catskill mountains, but I have seen no New-York specimens.]	
Geum vernum, *Torr. & Gr.*	Western District.
Agrimonia parviflora, *Ait.*	" "
Rhexia Mariana, *Linn.*	Long Island.
Melothria pendula,	Western District.
Lythrum alatum, *Pursh.*	" "
Ludwigia hirtella, *Raf.*	Long Island.
— linearis, *Walt.*	"
Tillæa simplex, *Nutt.*	Hudson river District.
Sedum ternatum, *Michx.*	Western District.
Hydrangea arborescens, *Linn.*	" "
Eryngium Virginianum, *Lam.*	Long Island.
Viscum flavescens, *Pursh.*	"
Diodia teres, *Walt.*	"
Hedyotis purpurea, *Torr. & Gr.*	Western District.
Valeriana ciliata, *Torr. & Gr.*	" "
Liatris graminifolia, *Willd. var. δ.*	Long Island.
Eupatorium pubescens, *Muhl.*	"
Conoclinium celestinum, *DC.*	Western District.
Aster gracilis, *Nutt.*	Long Island.
— nemoralis, *Ait.*	"
Boltonia glastifolia, *l'Herit.*	Western District.
Solidago speciosa, *Nutt.*	Western District.
Solidago virgata, *Michx.*	Long Island.
— puberula, *Nutt.*	"
Echinacea purpurea, *Moench.*	Western District.
Rudbeckia fulgida, *Ait.*	" "
Helianthus macrocephalus, *Torr. & Gr.*	" "
— angustifolius, *Linn.*	Long Island.
Verbesina Virginica, *Linn.*	Western District.
— Siegesbeckia, *Michx.*	" "
Leiophyllum buxifolium, *Ell.*	Long Island.
Asclepias rubra, *Linn* (*acuminata*, Ph.)	"
Obolaria Virginica, *Linn.*	Hudson river and Western Districts.
Phlox maculata, *Linn.*	Long Island and Western District.
— aristata, *Michx.*	Hudson river and Western Districts.
Dodecatheon integrifolium, *Michx.*	Western District.
Pyxidanthera barbulata, *Michx.*	Long Island.
Gerardia auriculata, *Michx.*	Western District.
Castilleja pallida, *Kunth.*	Northern District.
Trichostema linearis, *Nutt.*	Long Island.
Lithospermum angustifolium, *Michx.*	Western District.
Ruellia (Dipteracanthus) strepens,	" "
Betula glandulosa, *Michx.*	Northern and Western Districts.
Salix. Several species.	Northern District.
Listera convallarioides, *Nutt.*	" "
Eriocaulon decangulare, *Linn.*	Long Island.
Xerophyllum setifolium, *Michx.*	"
Lophiola aurea, *Ker.* (*Conostylis Americana*, Ph.)	"
Lachnanthes tinctoria, *Ell.*	"
Tofieldia pubens, *Pursh.*	"
— glutinosa, *Pursh.*	Northern District.
Ceratoschœnus macrostachys, *Gray.*	Long Island.
Psilocarya scirpoides, *Torr.*	"
Cyperus erythrorhizos, *Muhl.*	Western District.
Milium amphicarpon, *Pursh.*	Long Island.

TABLE I.

Exhibiting the Natural Orders of this work, alphabetically arranged, with the number of New-York species belonging to each, and the proportion which they bear to all the phænogamous plants of the State.

NAMES OF THE ORDERS.	No. of Species.	Proportion borne by an order to all the phænogamous plants.
Acanthaceæ	1	1 : 1452
Aceraceæ	5	1 : 290
Alismaceæ	7	1 : 207
Amaranthaceæ	4	1 : 363
Anacardiaceæ	6	1 : 242
Anonaceæ	1	1 : 1452
Apocynaceæ	2	1 : 726
Aquifoliaceæ	6	1 : 242
Araceæ	7	1 : 207 1/7
Araliaceæ	5	1 : 290
Aristolochiaceæ	2	1 : 726
Asclepiadaceæ	10	1 : 145
Balsamifluæ	1	1 : 1452
Balsaminaceæ	2	1 : 726
Berberidaceæ	4	1 : 363
Betulaceæ	9	1 : 161
Bignoniaceæ	1	1 : 1452
Boraginaceæ	14	1 : 104
Cabombaceæ	1	1 : 1452
Cactaceæ	1	1 : 1452
Callitrichaceæ	1	1 : 1452
Campanulaceæ	4	1 : 363
Capparidaceæ	1	1 : 1452
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Caryophyllaceæ	25	1 : 58
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Ceratophyllaceæ	1	1 : 1452
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Cruciferæ	31	1 : 47
Cucurbitaceæ	2	1 : 726
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Cyperaceæ	159	1 : 9
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Dioscoriaceæ	1	1 : 1452
Dipsaceæ	1	1 : 1452
Droseraceæ	4	1 : 363
Ebenaceæ	1	1 : 1452
Elatinaceæ	1	1 : 1452
Eleagnaceæ	1	1 : 1452
Empetraceæ	2	1 : 726
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Grossulaceæ	5	1 : 290
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Hydrophyllaceæ	3	1 : 484
Hypericaceæ	11	1 : 132
Hypoxidaceæ	1	1 : 1452
Illecebraceæ	4	1 : 363
Iridaceæ	3	1 : 484
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Juglandaceæ	6	1 : 242
Juncaceæ	18	1 : 80
Labiatæ	47	1 : 31
Lauraceæ	2	1 : 726
Leguminosæ	53	1 : 27
Lemnaceæ	5	1 : 290
Lentibulaceæ	2	1 : 726
Liliaceæ	132	1 : 11
Limnanthaceæ	1	1 : 1452
Linaceæ	2	1 : 726
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Magnoliaceæ	3	1 : 484
Malvaceæ	8	1 : 181
Melanthaceæ	10	1 : 145
Melastomaceæ	1	1 : 1452
Menispermaceæ	1	1 : 1452
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Ulmaceæ	4	1 : 363
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Violaceæ	10	1 : 12
Vitaceæ	5	1 : 290
Xyridaceæ	1	1 : 1452
Zanthoxylaceæ	2	1 : 726

TABLE II.

EXHIBITING THE NUMBER OF SPECIES BELONGING TO EACH OF THE GRAND DIVISIONS AND CLASSES OF THE FLORA OF NEW-YORK.

FLOWERING or PHÆNOGAMOUS PLANTS	1452
EXOGENÆ	1025
Polypetalæ	422
Monopetalæ	444
Apetalæ	145
Gymnospermæ	14
ENDOGENÆ	427
FLOWERLESS or CRYPTOGAMOUS PLANTS	59
Equisetaceæ	6
Filices	41
Lycopodiaceæ	9
Salviniaceæ	2
Isoetaceæ	1

Proportion of Endogenæ to Exogenæ..... 1 : 3⅔

Proportion of Filicoid plants to Flowering plants, 1 : 25

EXPLANATION OF THE PLATES IN VOLUME II.

PLATE 73. PRINOS GLABER (page 4) in fruit, with a branch in flower. *Fig.* 1. longitudinal section of the fruit : *fig.* 2. transverse section : *fig.* 3. a seed : *fig.* 4. longitudinal section of the same.

74. GERARDIA FLAVA (page 47). *Fig.* 1. a ripe capsule : *fig.* 2. the same cut transversely, both natural size : *fig.* 3. a seed, magnified.

75. PEDICULARIS LANCEOLATA (page 49) in flower; with a stamen, the corolla and opened capsule separately represented ; all of the natural size.

75 (*a*). COLLINSONIA CANADENSIS (page 65).

76. CUNILA MARIANA (page 66) ; the entire plant of the natural size ; with a separate flower magnified.

77. SCUTELLARIA PILOSA (page 70) in flower. *Fig. a.* the fructiferous calyx.

78. SCUTELLARIA INTEGRIFOLIA (page 71). The upper part of the plant.

79. ONOSMODIUM HISPIDUM (page 84). *Fig.* 1. a separate flower : *fig.* 2. the corolla laid open : *fig.* 3. the calyx : *fig.* 4. the ovaries and style ; all magnified.

80. PHLOX ARISTATA. This figure was drawn and engraved under the impression that plant had been collected in the State, which was afterwards found to be a mistake ; although it grows close upon our borders. It will doubtless soon be detected in some of the southwestern counties, or on Staten Island.

81. GENTIANA SAPONARIA (page 106). The left hand figure : *fig.* 1. a flower of the same laid open : *fig.* 2. G. ANDREWSII : *fig.* 3. a flower of the same laid open.

82. GENTIANA DETONSA (page 108). *Fig.* 1. the corolla laid open : *fig.* 2. pistil.

83. SABBATIA ANGULARIS (page 113) in flower and fruit.

84. SABBATIA CHLOROIDES (page 113). The whole plant of the natural size.

85. ASCLEPIAS PURPURASCENS (page 120). *Fig.* 1. a lobe of the stamineal crown : *fig.* 2. a seed : *fig.* 3. follicle.

86. ASCLEPIAS VARIEGATA (page 121). *Fig.* 1. follicle : *fig.* 2. a flower : *fig.* 3. a lobe of the stamineal crown.

PLATE 87. Asclepias verticillata (page 123). *Fig.* 1. a flower somewhat magnified : *fig.* 2. a follicle of the natural size.

88. Acerates viridiflora (page 124). Broad and narrow-leaved forms ; with the ripe follicles ; all of the natural size.

89. Fraxinus Americana (incorrectly named *F. concolor* in the plate) (page 125) in fruit.

90. Fraxinus pubescens ? (incorrectly named *F. acuminata* in the plate) (page 126).

91. Aristolochia Serpentaria (page 130). *Fig.* 1. capsule, natural size : *fig.* 2. transverse section of the same, a little magnified : *fig.* 3. capsule with one of the cells laid open : *fig.* 4. a seed.

92. Asarum Canadense (page 131). *Fig.* 1. a flower : *fig.* 2. the same cut through longitudinally, both natural size : *fig.* 3. a stamen : *fig.* 4. the united styles : *fig.* 5. transverse section of the capsule ; the last three magnified.

93. Amaranthus pumilus (page 144). *Fig.* 1. a fertile flower, natural size : *fig.* 2, the same magnified : *fig.* 3. capsule, showing the transverse dehiscence : *fig.* 4. a seed.

94. Phytolacca decandra (page 157). *Fig.* 1. a raceme of the fruit : *fig.* 2. a flower magnified : *fig.* 3. stamen.

95. Nyssa multiflora (page 161) in fruit. *Fig.* 1. a fascicle of staminate flowers, natural size : *fig.* 2. a staminate flower deprived of one sepal, magnified : *fig.* 3. a fascicle of pistillate flowers, natural size : *fig.* 4. a pistillate flower, magnified : *fig.* 5. longitudinal section of the ovary.

96. Ulmus racemosa (page 166). *Fig.* 1. a branch in leaf : *fig.* 2. flowers of the natural size : *fig.* 3. fruit : *fig.* 4. corky bark of a branch.

97. Saururus cernuus (page 168), with a separate flower a little magnified.

98. Podostemum (Lacis) ceratophyllum (page 171). *Fig.* 1. a flower magnified : *fig.* 2. stamens, showing their united filaments : *fig.* 3. capsule : *fig.* 4. the same magnified.
Myriophyllum ambiguum (vol. 1. page 243). *Fig.* 1. a flower : *fig.* 2. the same seen from above, and expanded : *figs.* 3. 4. stamens : *fig.* 5. capsule : *fig.* 6. transverse section of the same : all magnified.

99. Euphorbia corollata (page 175). *Fig.* 1. staminate flower : *fig.* 2. pistillate flower : *fig.* 3. fruit, with one of the carpels laid open.

100. Carya tomentosa, var. *integrifolia* (page 182) in fruit.

101. Carya glabra (page 182) in fruit.

102. Ostrya Virginica (page 185) in fruit. *Fig. a.* fertile ament.

103. Carpinus Americana (page 185) in fruit. *Fig.* 1. involucral scale and nut : *fig.* 2. the nut separate : all natural size.

104. Quercus Phellos (page 187) in fruit.

105. Quercus nigra (page 188) in fruit.

PLATE 106. QUERCUS RUBRA (page 189) in fruit.

107. QUERCUS PALUSTRIS (page 190) in fruit.

108. QUERCUS MACROCARPA (page 191) in fruit.

109. QUERCUS PRINOIDES (page 193) in fruit.

110. FAGUS FERRUGINEA (page 194). *Fig. a.* nut of the natural size.

111. CASTANEA VESCA, var. *Americana* (page 195). *Fig.* 1. involucre of the ripe fruit : *fig.* 2. nut : both of the natural size.

112. BETULA POPULIFOLIA (page 199). *Fig.* 1. a bract : *fig.* 2. fruit : both magnified.

113. BETULA LENTA (page 200). *Fig.* 1. a bract : *fig.* 2. fruit : both of natural size.

114. BETULA NANA (page 201). *Fig.* 1. a bract : *fig.* 2. fruit : both magnified.

115. ALNUS SERRULATA (page 202). *Fig.* 1. a bract of the ripe ament : *fig.* 2. fruit : both magnified.

116. ALNUS VIRIDIS (page 203). *Fig.* 1. a bract : *fig.* 2. fruit : both magnified.

117. SALIX INCANA (page 204), (incorrectly named *S. candida* in the plate). *Fig.* 1. staminate aments, nat. size : *fig.* 2. staminate flower, magnified : *fig.* 3. fertile aments, natural size : *fig.* 4. one of the same, mature : *fig.* 5. fruit, magnified.

118. SALIX TRISTIS (page 205). *Fig.* 1. staminate aments, natural size : *fig.* 2. staminate flower, magnified : *fig.* 3. fertile aments, natural size : *fig.* 4. fruit, magnified.

119. SALIX LUCIDA (page 208). *Fig.* 1. staminate ament, natural size : *fig.* 2. staminate flower, magnified : *fig.* 3. fertile ament, nat. size : *fig.* 4. fruit, magnified.

120. SALIX PEDICELLARIS (page 212). *Fig.* 1. staminate ament, natural size : *fig.* 2. staminate flower, magnified : *fig.* 3. fertile ament, natural size : *fig.* 4. fruit, magnified.

121. POPULUS GRANDIDENTATA (page 214). *Fig.* 1. staminate ament : *fig.* 2. fertile ament, natural size : *fig.* 3. staminate flower magnified.

122. ADIKE (ADENIA) PUMILA (page 223). *Figs.* 1. & 2. staminate flowers : *fig.* 3. sepal and cucullate scale of a fertile flower : *figs.* 4. 5. fertile flowers.

123. ARISÆMA DRACONTIUM (page 240). *Fig.* 1. spadix of the staminate plant, natural size : *fig.* 2. staminate flowers, magnified : *fig.* 3. spadix of the polygamous plant, natural size : *fig.* 4. the same laid open : *fig.* 5. an ovary : *fig.* 6. an ovule : *fig.* 7. longitudinal section of the same.

124. PELTANDRA VIRGINICA (page 241). *Fig.* 1. spathe laid open, showing the spadix covered with flowers : *fig.* 2. swollen persistent base of the spathe enclosing the fruit : *fig.* 3. the same laid open : *fig.* 4. a stamen : *fig.* 5. an ovule seated on a spongy annulus : *fig.* 6. a berry cut through longitudinally, showing the single mature seed. (The base of the berry has been incorrectly placed above in the figure.)

PLATE 125. Udora Canadensis (page 264). *Fig.* 1. whorl of leaves : *fig.* 2. perfect flower : *fig.* 3. stigma : *fig.* 4. transverse section of the ovary : *fig.* 5. longitudinal section of the ovary ; all magnified : *fig.* 6. an ovule, showing primine and secundine : *fig.* 7. nucleus and part of the secundine : *fig.* 8. part of the primine ; the last three highly magnified.

126. Corallorhiza odontorhiza (page 269). *Fig.* 1. front view of the flower : *fig.* 2. side view of the same : both magnified.

Corallorhiza multiflora (page 269). *Fig.* 1. front view of the flower : *fig.* 2. side view of the same : both magnified.

127. Aplectrum hyemale (page 270) of the natural size.

128. & 129. Spiranthes gracilis (page 282). The right hand figure. *Fig. a.* lip, magnified.

Spiranthes cernua (page 283) natural size.

130. Smilacina racemosa (page 298) and a cluster of the fruit.

131. Pontederia cordata (page 312). *Fig.* 1. spike of fruit : *fig.* 2. fruit magnified : *fig.* 3. transverse section of the same, showing the fertile and two abortive cells : *fig.* 4. longitudinal section of the seed, considerably magnified.

132. Heteranthera reniformis (page 313). *Fig.* 1. spathe natural size : *fig.* 2. a flower : *fig.* 3. the same with the perianth removed : *fig.* 4. capsule, natural size : *fig.* 5. the same laid open and magnified : *fig.* 6. transverse section of the capsule : *fig.* 7. seed, magnified.

133. Heteranthera (Schollera) graminea (page 313). *Fig.* 1. flower : *fig.* 2. pistil : *fig.* 3. transverse section of the ovary : *fig.* 4. ovary laid open : all magnified.

134. Melanthium Virginicum (page 316). *Fig. a.* capsule, natural size.

135. Cyperus Nuttallii (page 339). *Fig.* 1. a spikelet : *fig.* 2. portion of the rachilla : *fig.* 3. a scale : *fig.* 4. caryopsis, with the persistent style and stamens : *fig.* 5. transverse section of the caryopsis ; all magnified.

136. Cyperus strigosus (page 340). *Fig.* 1. scale of the spikelet : *fig.* 2. achenium : *fig.* 3. seed (the artist has improperly placed a *style* on this!) : all magnified.

137. Cyperus repens (page 341). *Fig.* 1. a spikelet : *fig.* 2. achenium : both magnified.

138. Cyperus Grayi (page 342). *Fig.* 1. spikelet : *fig.* 2. scale : *fig.* 3. portion of the winged rachilla : *fig.* 4. achenium, stamens and style : *fig.* 5. transverse section of the achenium : all magnified.

139. Scirpus debilis (page 352). *Fig.* 1. a spike : *fig.* 2. scale : *fig.* 3. flower, with the scale removed : *fig.* 4. style : *fig.* 5. transverse section of the achenium : all magnified.

140. Eriophorum alpinum (page 357). *Fig.* 1. spike : *fig.* 2. separate flower, both somewhat magnified : *fig.* 3. flower, considerably magnified : *fig.* 4. transverse section of the achenium.

PLATE 141. ERIOPHORUM VAGINATUM (page 358). *Fig.* 1. a separate flower : *fig.* 2. scale : *fig.* 3. achenium : *fig.* 4. a bristle : *fig.* 5. stamen : all magnified.

142. CAREX DECOMPOSITA (page 379). *Fig.* 1. a separate flower : *fig.* 2. perigynium : *fig.* 3. the same cut across, showing the thickened walls : *fig.* 4. achenium : all magnified.

143. CAREX CRINITA (page 389). *Fig.* 1. scale and stamens : *fig.* 2. mature perigynium and fertile scale : *fig.* 3. transverse section of the perigynium : *fig.* 4. achenium : all magnified.

144. CAREX TENTACULATA (page 395). *Fig.* 1. staminate scale and flower : *fig.* 2. perigynium and fertile scale : *fig.* 3. transverse section of the perigynium : *fig.* 4. achenium : *fig.* 5. the same, cut across : all magnified.

144 (*a*). CAREX LANUGINOSA (page 400), (named *C. pellita* in the plate). *Fig.* 1. staminate flower and scale : *fig.* 2. perigynium and fertile scale : *fig.* 3. transverse section of the perigynium : *fig.* 4. achenium.

145. CAREX CAREYANA (page 409). *Fig.* 1. scale from a fertile spike : *fig.* 2. the same, with the perigynium : *fig.* 3. achenium.

146. PANICUM (DIGITARIA) SANGUINALE (page 423). *Fig.* 1. a pair of spikelets : *fig.* 2. separate spikelet, showing the upper glume : *fig.* 3. perfect flower.
PANICUM XANTHOPHYSUM (page 426). *Fig.* 1. a spikelet, front view : *fig.* 2. the same, back view : *fig.* 3. perfect flower : *fig.* 4. the same, with the paleæ removed.

147. PANICUM (DIGITARIA) FILIFORME (page 424). *Fig.* 1. a pair of spikelets : *fig.* 2. upper glume and neuter flower.
CAREX SUBULATA (page 391). *Fig.* 1. perigynium and fertile scale : *fig.* 2. the reflexed teeth of the orifice of the perigynium : *fig.* 3. transverse section of the perigynium and achenium : *fig.* 4. fertile scale : *fig.* 5. achenium : all magnified.

148. PANICUM AGROSTOIDES (page 429). *Fig.* 1. a spikelet : *fig.* 2. neuter flower : *fig.* 3. perfect flower : *fig.* 4. transverse section of the same : all magnified.

149. ARISTIDA DICHOTOMA (page 434), and magnified spikelets.

150. CALAMAGROSTIS CANADENSIS (page 444). *Fig.* 1. a spikelet : *fig.* 2. the same with the glumes removed : *fig.* 3. pistil : all magnified.
KŒLERIA TRUNCATA (page 469). *Fig.* 1. a spikelet : *fig.* 2. a single flower : both magnified.

151. CALAMAGROSTIS COARCTATA (page 444). *Fig.* 1. a spikelet : *fig.* 2. the same, with the glumes removed : *fig.* 3. rudimentary flower : all magnified.

152. CALAMAGROSTIS INEXPANSA (page 445). *Fig.* 1. a spikelet : *fig.* 2. the same, with the glumes removed : *fig.* 3. rudimentary flower.

153. SPARTINA CYNOSUROIDES (page 448). *Fig.* 1. spikelet : *fig.* 2. lower palea, showing the slightly 2-cleft summit : *fig.* 3. flower, with the glumes and paleæ removed : *fig.* 4. pistil : *fig.* 5. spikelet of *S. juncea*.

PLATE 154. TRISETUM MOLLE (page 452). *Fig.* 1. a spikelet : *fig.* 2. a rudimentary flower : both magnified.
FESTUCA TENELLA (page 470), with a magnified spikelet.

155. POA DENTATA (page 461). *Fig.* 1. a spikelet : *fig.* 2. a flower : *fig.* 3. lower palea : *fig.* 4. upper palea : *fig.* 5. pistil.

156. TRICUSPIS SESLERIOIDES (page 463). *Fig.* 1. a spikelet : *fig.* 2. a flower : *fig.* 3. lower glume : *fig.* 4. upper glume.

157. BROMUS SECALINUS (page 467). *Fig.* 1. lower palea : *fig.* 2. upper palea : *fig.* 3. stamens and pistils.

158. FESTUCA NUTANS (page 471). *Fig.* 1. a spikelet : *fig.* 2. a stamen : *fig.* 3. lower palea : *fig.* 4. upper palea.

159. ANTIGRAMMA (ASPLENIUM) RHIZOPHYLLA (page 494). *Figs.* 1 – 4. various occasional forms of the frond : *fig.* 5. veins and sori.

160. ONOCLEA SENSIBILIS, var. *obtusilobata* (page 499). *Fig. a.* represents an entire specimen of a small form of the plant, natural size : *fig. b.* a large and more common form of the plant, represented in outline : *fig.* 1. a portion of the frond magnified : *fig.* 2. a single segment, with the inflexed margin laid open, and the indusia removed : *figs.* 3. & 4. outline figures, showing the situation of the sori and the appearance of the veins.

161. LYGODIUM PALMATUM (page 504), with magnified figures of the fructification.

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TO THE

ORDERS, GENERA, SPECIES, SYNONYMS, AND ENGLISH NAMES,

IN THE FIRST AND SECOND VOLUMES.

*** The Orders and Suborders are in large capitals; the Genera, Tribes and Subtribes in small capitals; the Species and English names in small roman letters, and all synonyms in italics.

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END OF VOL. II.

Prinos glaber

Ink berry

Pedicularis lanceolata

Tall Lousewort.

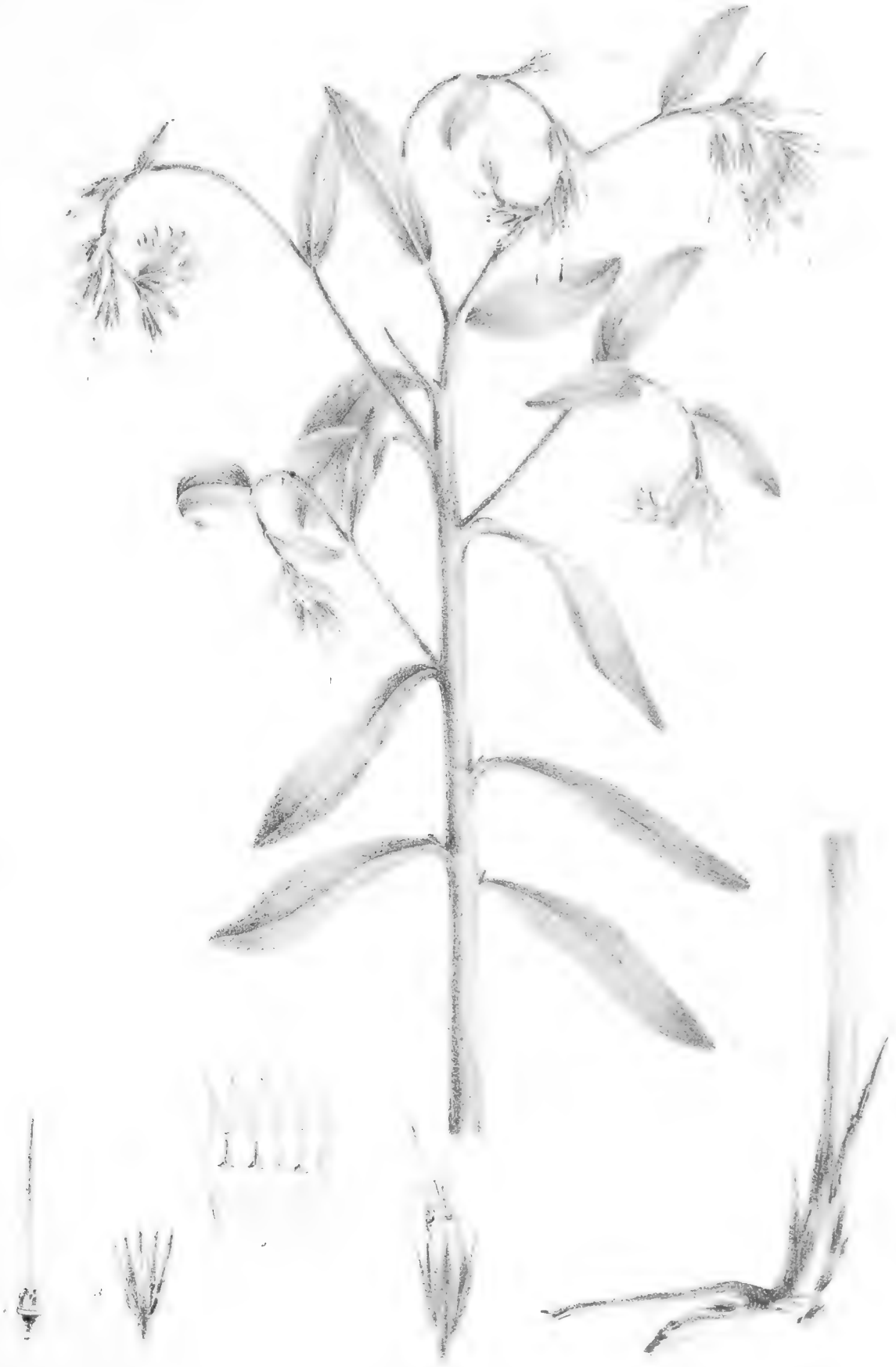
Collinsonia Canadensis

Knot Root.

Dittany.

Scutellaria canaliculata

Entire leaved Scullcap



False Gromwell.

Gentiana saponaria — Soap Gentian.

Gentiana Andrewsii — Andrews Gentian

Gentiana detonsa Smaller fringed Gentiana

Sabbatia angularis

American Centaury

Sabbatia grandiflora

Large-flowered Sabbatia.

Dark flowered Silk weed

Asclepias [illegible]

Winged Asclepias

Asclepias verticillata

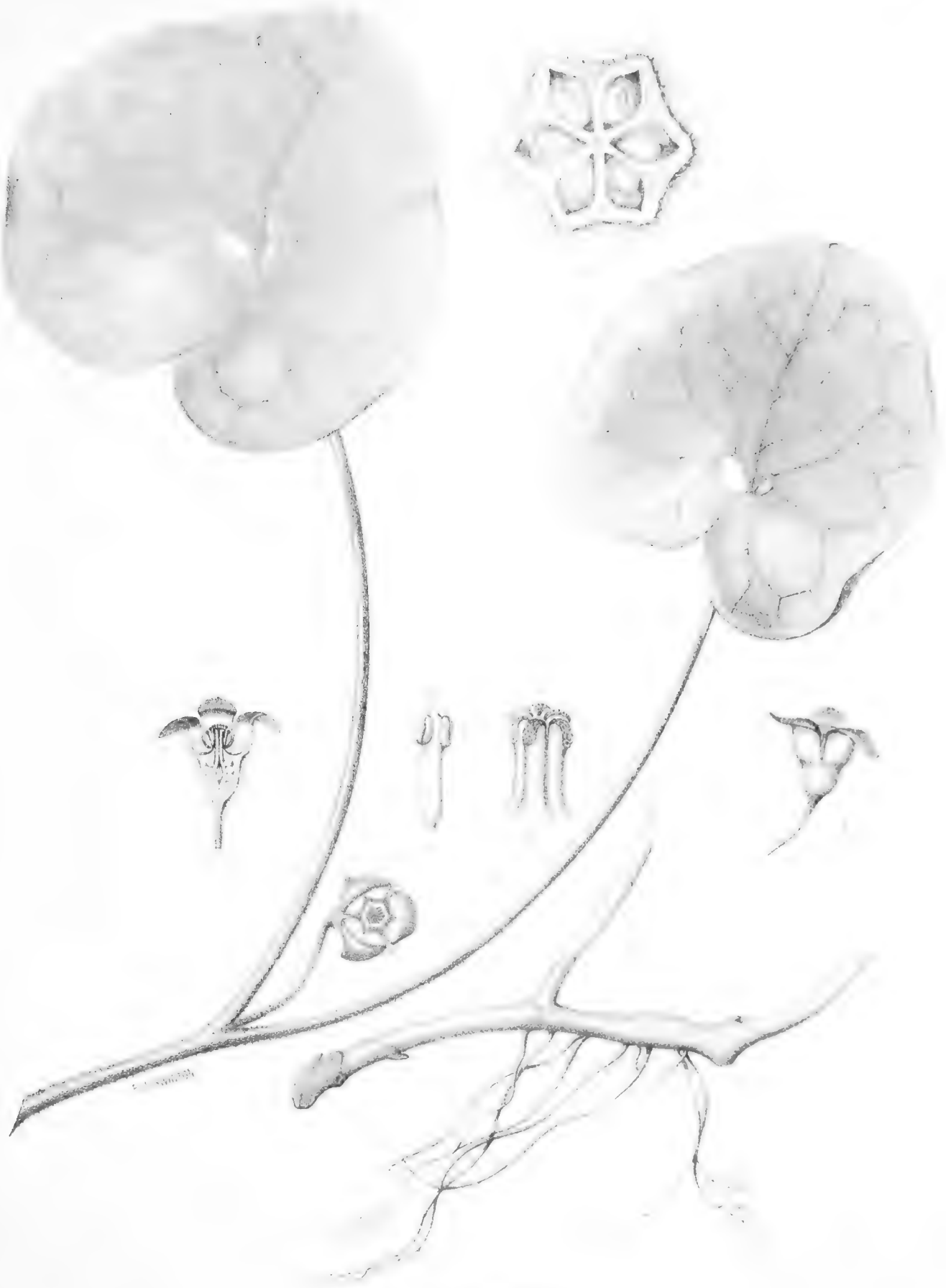
Whorl leaved Swallow wort.

Green-flowered Milkweed

White Ash

Fraxinus viridis — Green Ash

Virginian Snake-root



Asarum Canadense

Wild Ginger

Amaranthus pumilus.

Dwarf Amaranth.

Phytolacca decandra

Poke-weed .

Nyssa multiflora

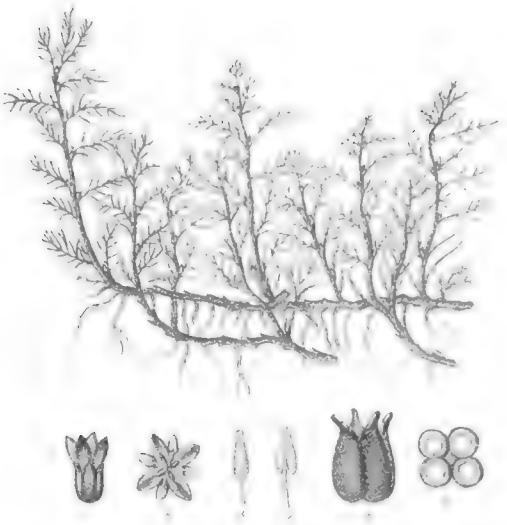
Black Gum.

Ulmus racemosa

Thomas's Elm

Saururus cernuus

Lizard's tail.



Utricularia antiquum at Linn. mus.

Lauea ceratophylla

Euphorbia corollata

Flowering Spurge

Hickory.

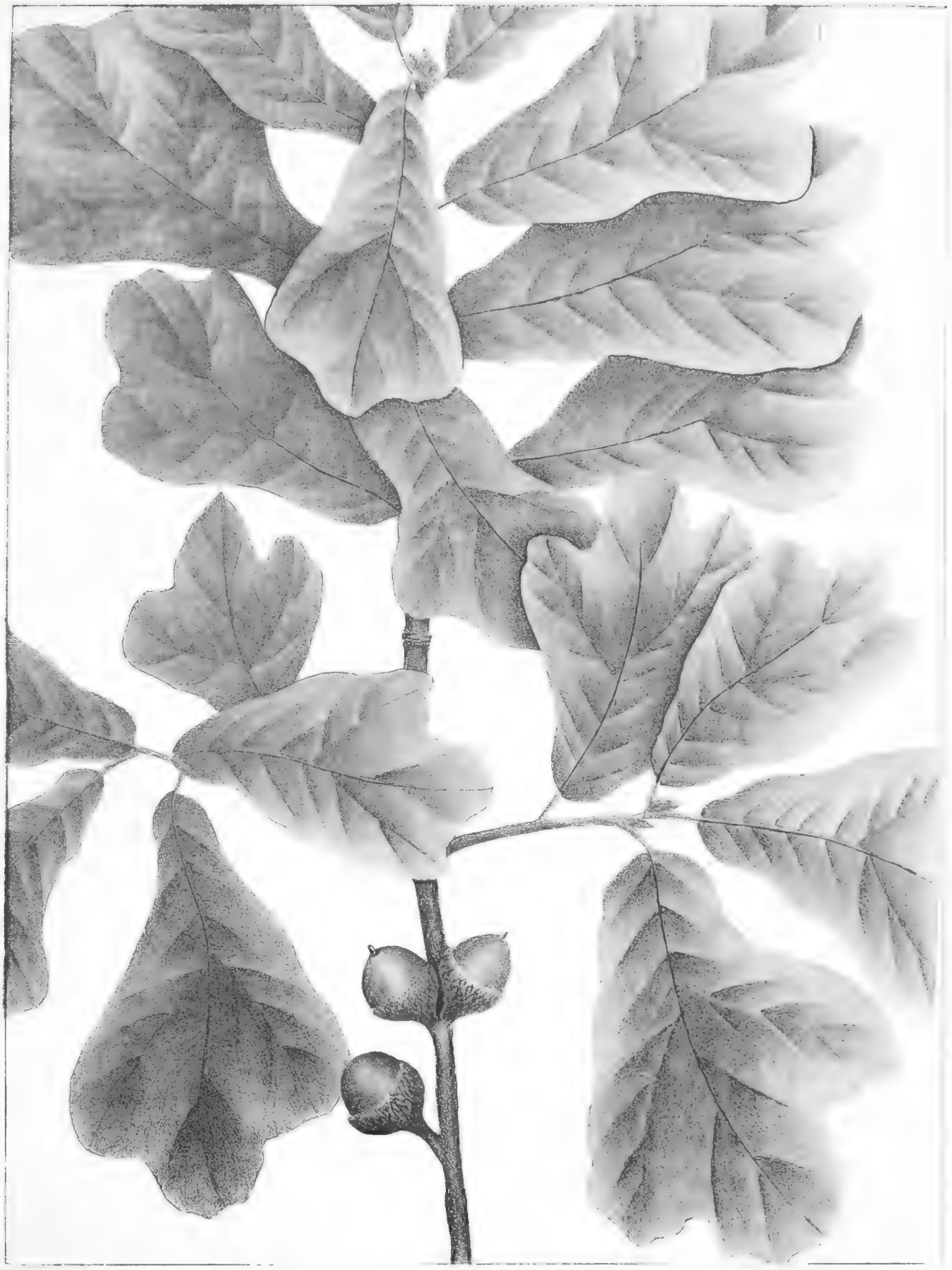
Pig-nut Hickory .

Hop Hornbeam.

Carpinus Americana.

Hornbeam.

Willow Oak.



Black Jack Oak

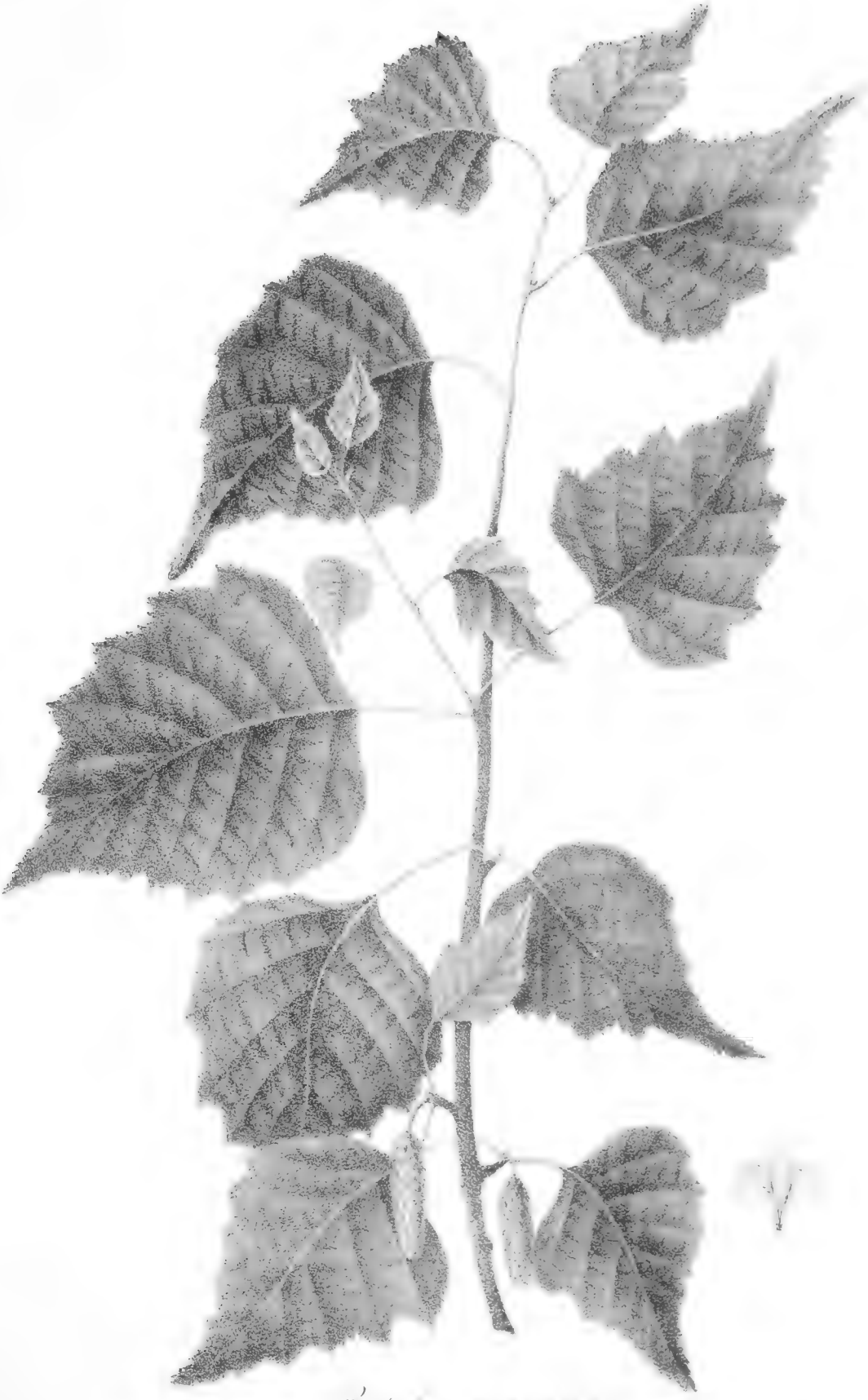
Quercus palustris.

Over cup White Oak

Quercus prinoides – Chinquapin Oak

Beech

Castanea vesca var. Americana American Chestnut



Betula populifolia

White Birch

Betula lenta

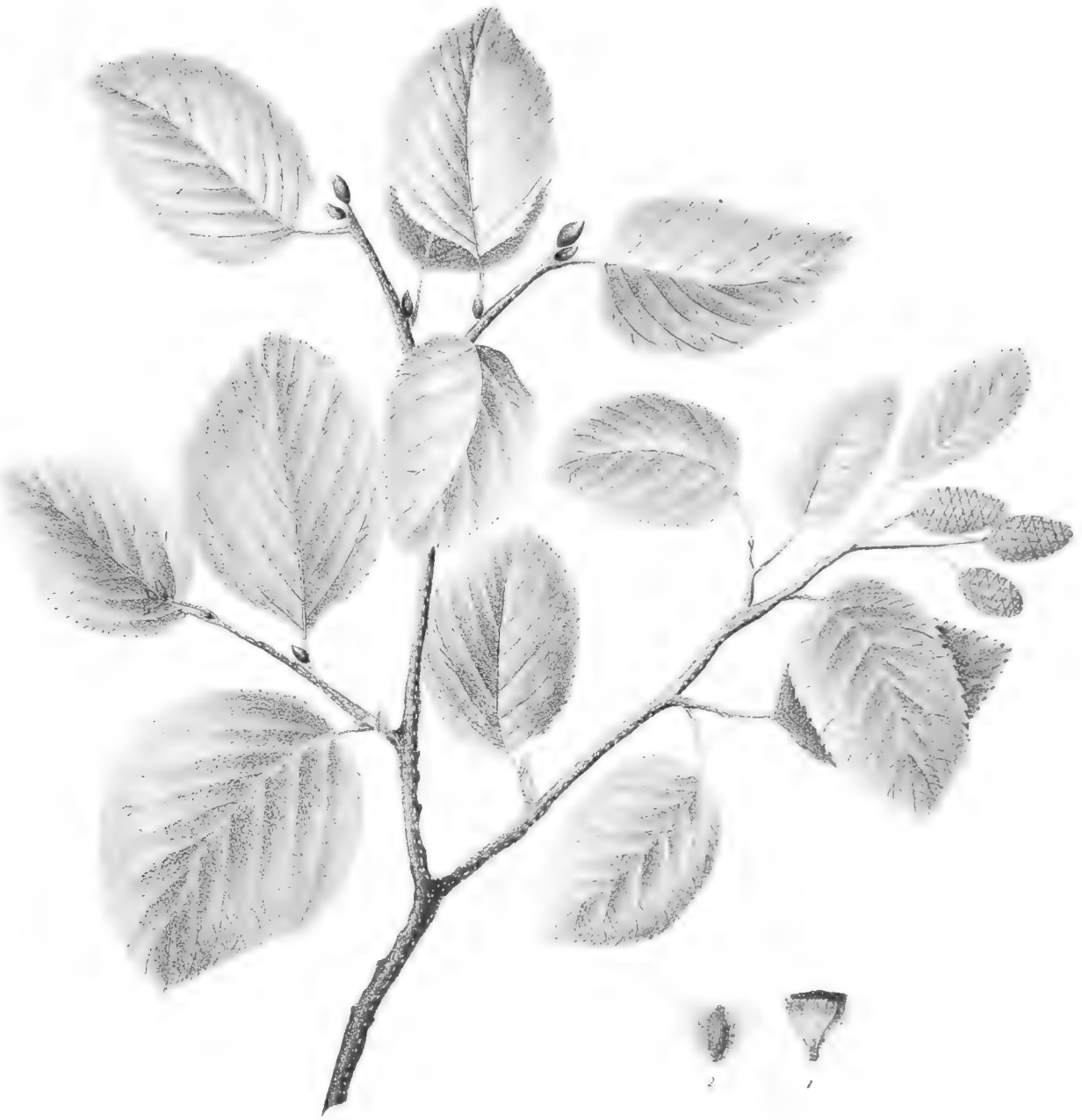
Black or Cherry Birch

Betula nana

Dwarf Birch

Alnus serrulata

Common Alder



Alnus viridis

Green Alder.

Hoary Willow

Salix tristis

Mourning Willow.

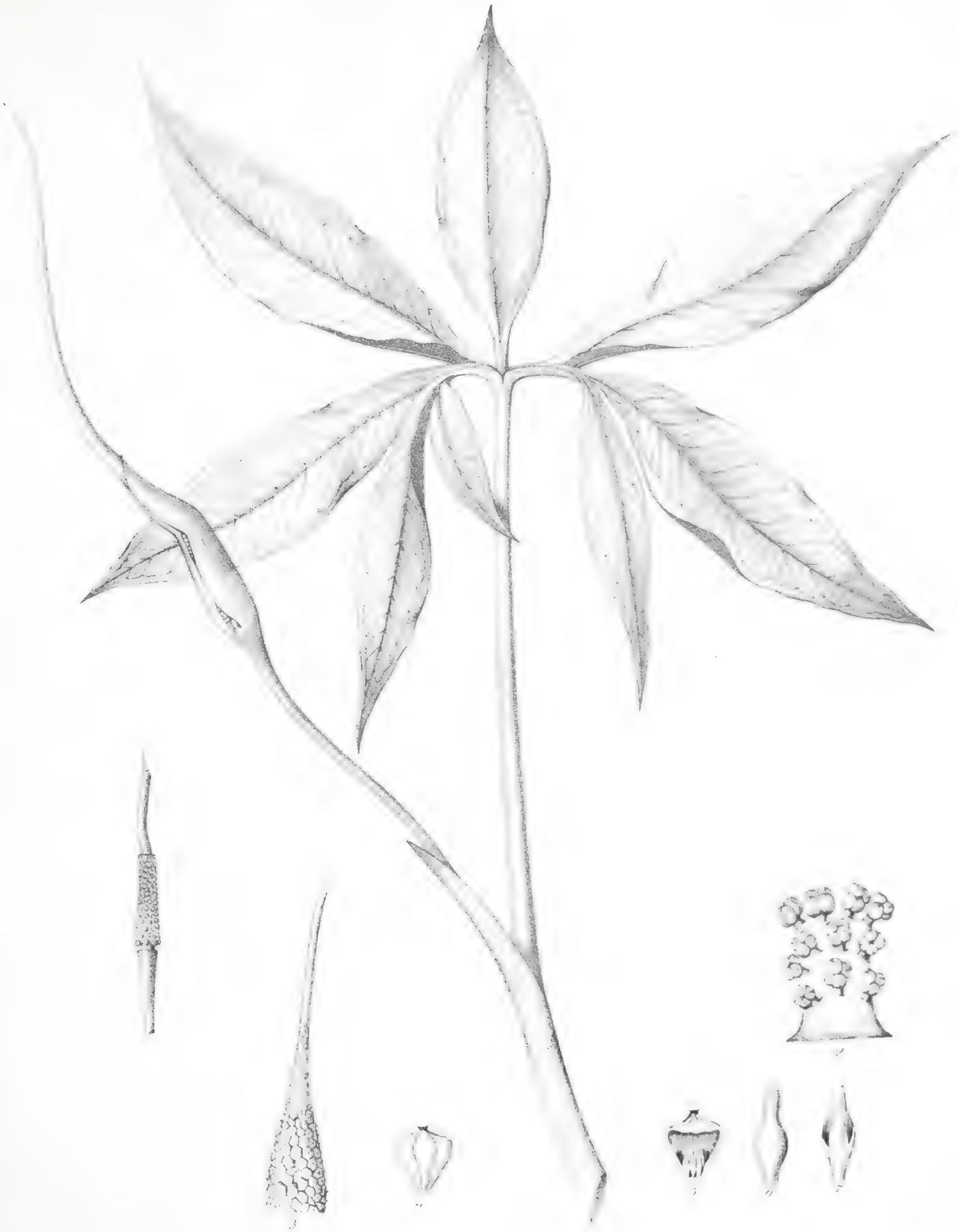
Salix lucida

Shining leaved Willow

Longstalked Willow.

Large Aspen

Pilea pumila Rich Weed.



Arum Dracontium

Green Dragon

Utricularia vulgaris

Ditch moss

Corallorhiza multiflora

Many Flowered Coralroot

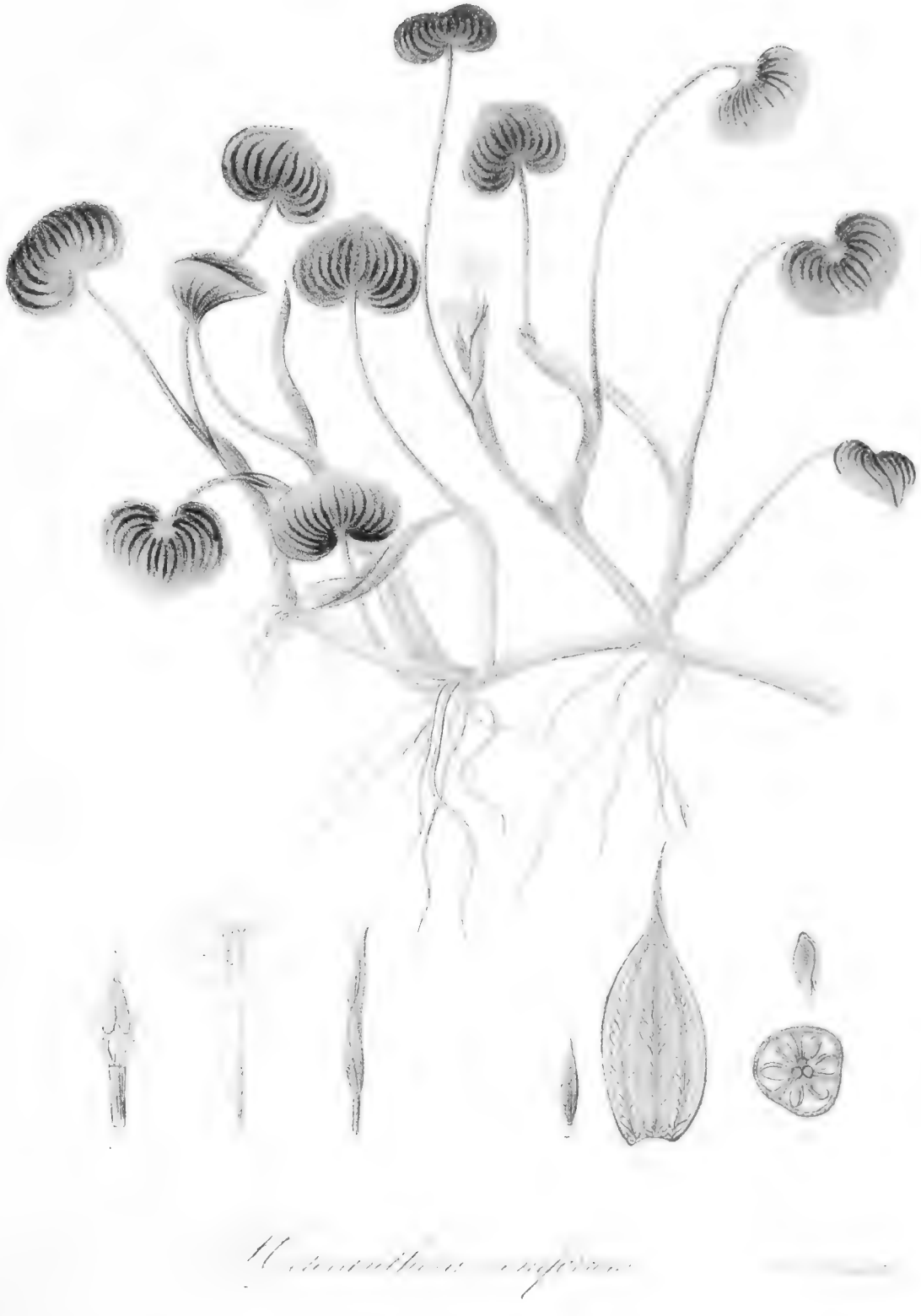
Corallorhiza [illegible]

Toothed Coralroot

. *Ipsectium hyoum.*

Maynard Fec

Pickerel weed



Schoenoplectus graminifolius

Water Stargrass

Cyperus Nuttallii

Nuttall's Galingale

1
2
3

Creeping Galingale.

Cyperus Iria — Gray's Galingale

Scirpus debilis Weak Club Rush

Tawny Cotton Grass

Sheathed Cotton-grass.

Carex decomposita L.

Decompound Sedge

Carex canescens

Chaffy Sedge .

Carex lanceolata

Long-pointed Sedge

Carex Careyana

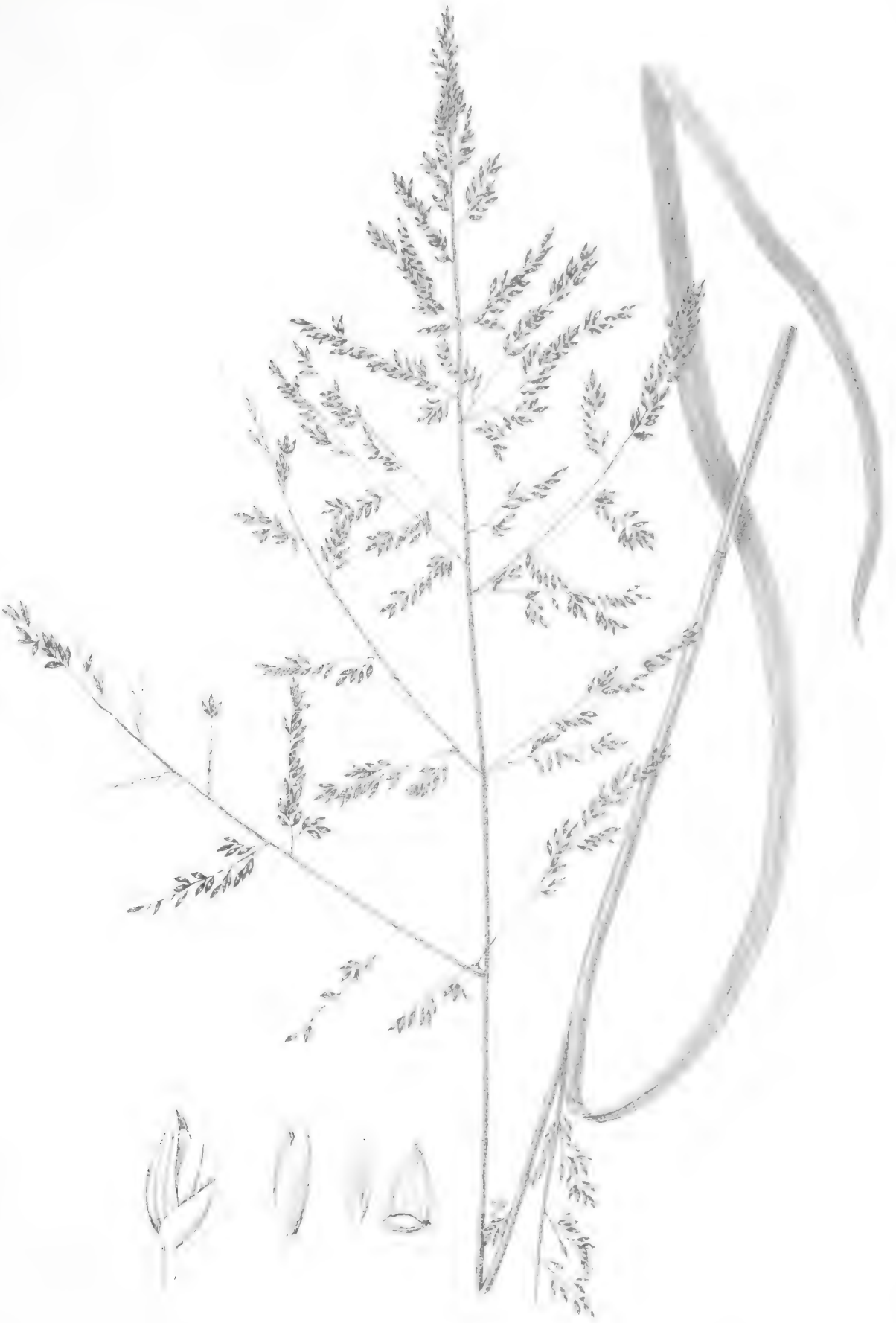
Carey's Sedge.

Panicum xanthophysum. Yellow Panic Grass

Digitaria sanguinalis Common Crab Grass

Digitaria filiformis, Slender Crab Grass

Carex subulata Awl-fruited Sedge



Agrostis like Panic Grass

Aristida basiramea

Forked Awn grass

Truncated Koeleria

Canadian Reed grass

Calamagrostis crassiflora

Crowded Calamagrostis

Close-flowered Calamagrostis.

Spartina polystachya

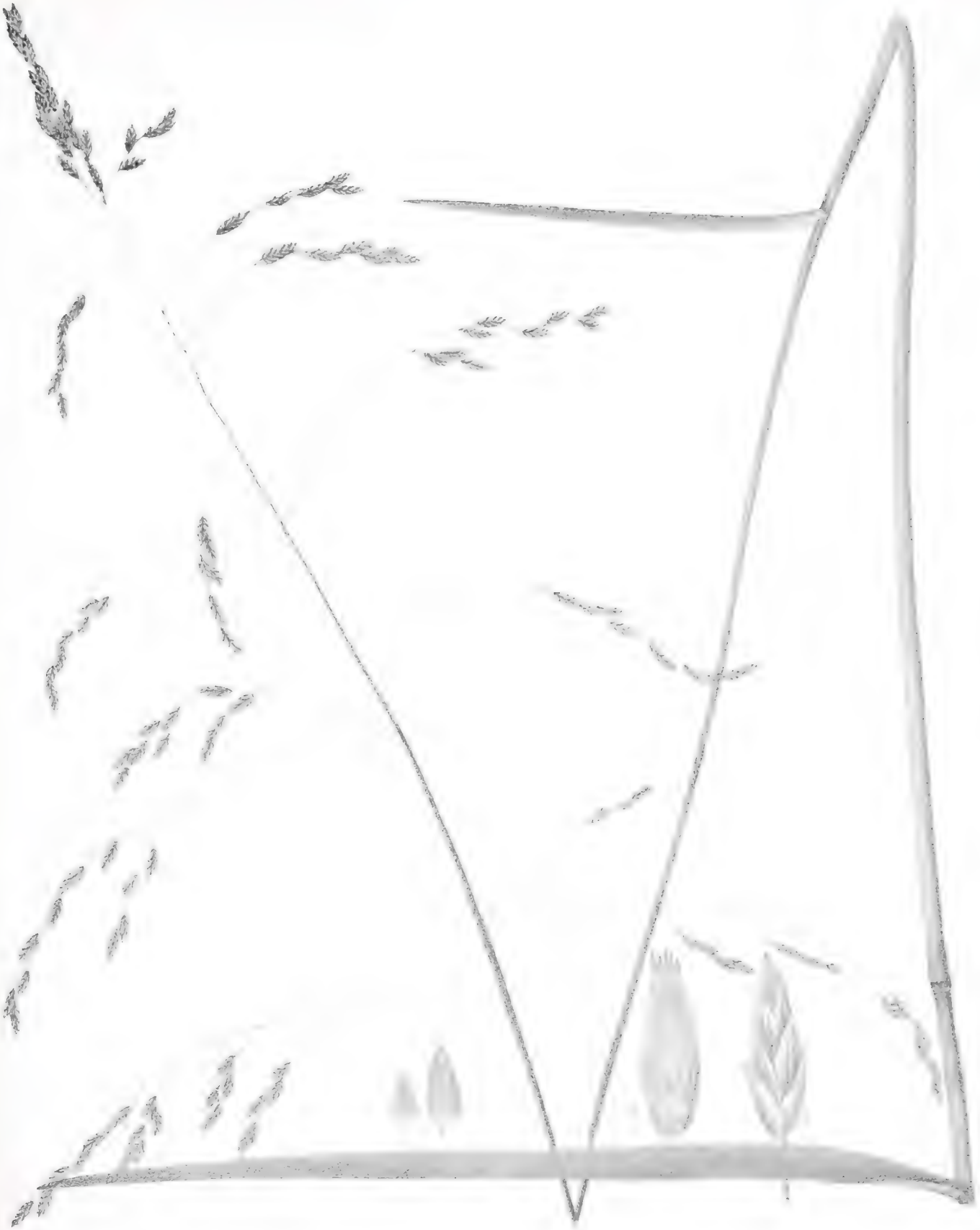
Many-spiked Salt-grass.

Festuca nitida

Festuca tenuis

Slender Fescue-Grass

Tooth-Flowered Meadow Grass



Lith. of Endicott.

Chess or Cheat

Nodding Fescue Grass

Walking Fern

Obtuse lobed Sensitive fern.

Lygodium palmatum.—Climbing Fern.

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